01-0333

General Electric Company
100 Woodlawn Ave., Pittsfield, MA 01201

Transmitted Via Federal Express

August 12, 1999

Michael Nalipinski
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02203-2211

Re: Pittsfield/Housatonic River Site,
On-Plant Consolidation Areas -
Addendum to June 1999 Detailed Work Plan

Dear Mr. Nalipinski:

This letter addresses several comments identified by the United States Environmental Protection Agency (EPA) stemming from its review of a document entitled *Detailed Work Plan for On-Plant Consolidation Areas* (Detailed Work Plan). That document, prepared by the General Electric Company (GE), expanded upon prior submittals related to the design, construction, operation, closure, and post-closure monitoring of two, and possibly three, consolidation areas located within GE's Pittsfield, Massachusetts facility. The consolidation areas will be utilized for the permanent consolidation of materials (e.g., soil, sediment, debris, etc.) generated during the performance of response actions associated with the Pittsfield/Housatonic River Site. In the Detailed Work Plan, submitted to the EPA in June 1999, GE provided technical details related to two on-plant consolidation areas proposed for use beginning in 1999 – the Hill 78 and Building 71 Consolidation Areas – and also provided conceptual design information related to a possible third future consolidation area – the New York Avenue/Merrill Road Consolidation Area. In a letter dated July 6, 1999, the EPA provided conditional approval of the Detailed Work Plan, but required that GE submit additional information to further describe or modify certain aspects of the proposed work. This letter addresses the specific EPA comments contained in their July 6, 1999 letter and, in doing so, serves as an addendum to the Detailed Work Plan (the Addendum).

The contents of this letter are organized to generally correlate to the format of the EPA's July 6, 1999 letter, in that a GE response is provided for each EPA comment. In addition, several attachments to this letter provide additional information to supplement GE's responses provided in this letter. Certain of the responses contained herein were discussed with the EPA and the Massachusetts Department of Environmental Protection (together, the Agencies) during a conference call held on July 8, 1999, as well as subsequent meetings held in Pittsfield on July 27 and August 4, 1999. Finally, discussions with the Agencies regarding Applicable or Relevant and Appropriate Regulations (ARARs) concerning the on-plant consolidation areas are currently ongoing; we expect to provide updated ARAR tables (reflecting the outcome of these discussions) in the next few days.

I. Responses to EPA "Significant Issues"

EPA Comment 1:

[GE shall perform] A geophysical evaluation around the current "perimeter" of Hill 78 prior to determining the "final" footprint of the consolidation area in order to define the exact extent of the existing landfill.

GE Response:

Since receipt of EPA's July 6, 1999 conditional approval letter, GE and the EPA have jointly developed and agreed to a scope of work for a geophysical survey related to the Hill 78 Consolidation Area. The scope of this survey is summarized below:

1. A geophysical survey (Geonics EM-31) will be conducted along the perimeter of the final configuration of the Hill 78 Consolidation Area. Along this perimeter, the geophysical survey will include a 50-foot-wide strip (approximate) located so that approximately 25 feet of the survey area is located within the areas subject to future consolidation. A figure depicting the general areas subject to the geophysical survey is provided in Attachment A. The areas shown on that figure are subject to field modification based on accessibility or site conditions (e.g., large trees and/or heavy vegetative growth). To the extent possible, GE will avoid clearing large amounts of vegetation in order to perform the geophysical survey. Note that, in addition to a 50-foot wide area around the perimeter of the future area, GE will conduct the geophysical survey for the area in the vicinity of existing monitoring well H78B-8R. As shown on the figure included in Attachment A, an approximate 25-foot by 25-foot area (centered around H78B-8R) will be subject to geophysical survey.

2. The results of the geophysical survey will be evaluated to identify potential anomalies. If such anomalies are identified and depending on their location, GE will consider and implement one of the two options discussed below:

   a. GE may install a soil boring downgradient of the anomaly. The boring will be advanced until the water table is encountered, with representative soil samples collected at two-foot intervals for visual classification and screening for organic vapors using a photoionization detector (PID). In the event that a possible source of contamination is identified (e.g. foreign materials, visual evidence of non-aqueous phase liquids or elevated PID readings) GE will review existing hydrogeologic information that is available for the area in question to assess downgradient migration potential. If the existing information is not sufficient to support such an assessment, GE will install a monitoring well downgradient of the area and/or extend the cover system over the area containing the anomaly.

   b. In lieu of subsurface investigations in response to a detected anomaly, GE may elect to extent the final cover system into the area of question.

Based on discussion with EPA, GE will not be required to conduct excavation activities in such an area, unless soil removal actions would otherwise be required to meed the Performance Standards to be set forth in the parties' Consent Decree or accompanying Statement of Work or unless the "reopener" conditions to be set forth in the Consent Decree are satisfied.

With EPA concurrence regarding the above scope of activities, GE will conduct the geophysical survey and present the results (including any assessment activities that may be needed in response to detected anomalies) in a separate submittal to the EPA. The timing of the survey will be such that it will be conducted prior to placement of materials in the area of interest.

EPA Comment 2:

The Work Plan Addendum needs to include a contingency to address the NAPL that was detected in well H78B-8R on the south side of Hill 78.

GE Response:

Monitoring and assessment activities conducted by GE since NAPL was detected in Well H78B-8R were summarized in an Immediate Response Action Completion Report transmitted to the Agencies on July 19, 1999. Specifically, that report described the activities conducted by GE as of that date, including NAPL recovery/monitoring activities; analytical testing of the NAPL; investigations related to the source and extent of NAPL; and groundwater elevations and flow direction. In addition, GE has performed several additional assessment activities based on comments contained in the EPA's July 6, 1999 letter conditionally approving the Detailed Work Plan. These include the continuation of NAPL monitoring; sampling and analysis for physical properties of the NAPL; and an assessment of NAPL recovery into well H78-8R (following bailing). The results of the physical property testing and NAPL recovery are included in Attachment B. An additional request from the EPA was a map of the underlying till contours. That map is provided in Attachment C. Responses to other EPA comments related to the NAPL detected at well H78B-8R are presented elsewhere in this Addendum.

EPA Comment 3:

Revise to include a section in the Detailed Work Plan text and figures which discusses how surface runoff will be managed. Discuss the interim and final drainage patterns/retention basins as appropriate.

GE Response:

Several sections of the Detailed Work Plan provide information concerning the management of stormwater during construction and active operation of the consolidation areas (i.e., Sections 5.9, 6.11, 6.13, and 6.14 of the work plan). In general, stormwater management during the construction and operation phases of the on-plant consolidation areas will utilize erosion control measures (e.g., hay bales, silt control fences, drainage swales, etc.), operational measures (e.g., daily and interim surface covers, work stoppage during heavy rainfall events, etc.) and routine monitoring. The collective goal of these activities is to minimize the potential for rainfall to contact the materials that have been placed within the consolidation areas, and, if such contact does occur, to minimize the potential for subsequent migration of these materials via rainfall runoff. In addition, efforts will be implemented to minimize the potential for rainfall run-on to occur during these active phases of the project.

Similar to the design and construction of the consolidation areas, final stormwater management measures will be addressed in a phased manner to correlate with future expansions to the consolidation areas. For instance, to support the near-term use of the Building 71 Consolidation Area, certain stormwater management components have been designed and will be constructed. With respect to the anticipated final configuration of the Building 71 and Hill 78 Consolidation Areas, preliminary evaluations have been conducted to understand the type, magnitude, and location of the stormwater

management components that may be needed in the future. A summary of these preliminary evaluations is provided below.

In general, rainfall runoff from the surface of the final consolidation areas will be collected by mid-slope drainage swales and/or perimeter ditches, routed into one or more stormwater retention basins, and ultimately discharged to a location along the southern edge of the Hill 78 Area. The stormwater retention basins will allow for the retention of rainfall runoff to attenuate/control the peak runoff flow rate and attain, to the extent possible, conditions that are compatible with the existing stormwater management system associated with the larger watershed area containing the consolidation areas. It is anticipated that the design of the stormwater retention basins will, to the extent practicable, accommodate the rainfall runoff associated with the 25-year, 24-hour storm event. However, the rainfall runoff resulting from this storm event will likely exceed the capacity of the existing stormwater management facilities that currently serve the Hill 78 Area and adjacent areas. Specifically, a report entitled *Revised Drainage Analysis Altresco Cogeneration* (HMM Associates, Inc.; April 1990) provides information concerning the characteristics of the approximately 130-acre watershed area within which the consolidation areas are located. This report includes information that has been considered as part of the conceptual stormwater design for the consolidation areas. In that report, it is determined that the discharge point of the watershed area is located along Merrill Road south of the Hill 78 Area, and that the hydraulic capacity at that location is approximately 45 cubic feet per second (cfs) (as compared to a flow of approximately 177 cfs corresponding to the 10-year, 24-hour storm event for the watershed area). Based on this information, although the future stormwater retention basins will be designed to accommodate (to the extent practicable) the 25-year, 24-hour storm event, some modifications may be necessary in consideration of the overall hydrology of the watershed area. A further description of the conceptual stormwater management facilities expected to be included as part of the future consolidation areas is presented below.

As presented in the Detailed Work Plan, one stormwater basin has been identified and will be located at the southern end of the Building 71 Consolidation Area (as shown on Technical Drawing A-4 of the Detailed Work Plan). Discharge from this basin will be routed into an existing storm sewer pipe located along the Pittsfield Generating Company, LLP property (as shown on Technical Drawing A-6 of the Detailed Work Plan). A second basin will likely be located in a low-lying area along the northern perimeter of the Hill 78 Consolidation Area. Discharge from this basin will probably be routed into an existing storm sewer pipe located on the western edge of the Hill 78 Consolidation Area via a new inlet structure. Finally, a third basin may be located in a low-lying area along the southern perimeter of the Hill 78 Consolidation Area. Discharge from this basin will most likely be routed into the existing drainage ditch located north of Merrill Road.

EPA Comment 4:

The Detailed Work Plan shall include a section which discusses options to temporarily close the Consolidation Areas if the area will be closed for an extended period of time (e.g., greater than 1 month). This would provide protection if the Consolidation Areas close during the winter.

see next pg.

GE Response:

Section 6.14 of the Detailed Work Plan describes the actions that will be performed when temporarily closing the consolidation areas. This information was reviewed with the Agencies in the July 8, 1999 conference call and is summarized as follows. In general, three types of surface covers are envisioned

in conjunction with the consolidation areas -- daily, interim, and final surface covers. Daily and interim covers are described below.

In areas subject to ongoing and day-to-day use, daily covers (consisting of polyethylene sheeting or similar materials) will be installed over the active portions of the consolidation areas at the end of each working day, while an interim surface cover is anticipated to be installed under three scenarios. First, an interim cover will be installed once a portion of the consolidation area reaches the final design height, but is not large enough to warrant installation of a final cover. Second, an interim cover will be installed when the consolidation activities are completed for a given year and final design heights have not been achieved. Finally, an interim cover will be installed when portions of the consolidation areas will be inactive for an extended period of time (e.g., 3 to 4 months).

The interim cover will consist of a three- to six-inch thick layer of clean soil capable of supporting vegetative growth. Depending on the season that the interim cover is installed, the cover may be seeded with a quickly germinating rye grass to establish an erosion resistant vegetative cover. If the growing season has passed (i.e., October 15), polyethylene sheeting or similar materials will be installed over the closed/inactive portions of the consolidation areas.

II. Responses to EPA "Specific Comments"

EPA Comment 1:

Page 1-3, 1st full para., Line 11: Revise to "....appropriate composite/averaging..."

GE Response:

Agreed. As discussed with the EPA, pertinent evaluations and decisions regarding the disposition of materials generated at a given Removal Action Area (RAA) will be addressed in the technical submittals (e.g., RD/RA Work Plan) specific to that RAA.

EPA Comment 2:

Page 1-5, last paragraph: "New" consolidation areas include only New York/Merrill Road area. Also, we should stipulate the size constraints of the consolidation area.

GE Response:

Agreed. Size constraints related to the consolidation areas (i.e., approximate horizontal extent and maximum elevation) are provided Section 2.2 of the Detailed Work Plan.

EPA Comment 3:

Page 2-5, Section 2.4.1, Item 3: Define the permeability of the GDC that GE is proposing to use.

GE Response:

The specified permeability of the GDC is 2×10^{-3} m^2/sec.

EPA Comment 4:

Page 3-1, Pre-Design Activities: The Work Plan Addendum shall include further evaluation of the NAPL discovered at well location H78B-8R. At a minimum, the evaluation of the NAPL should include the following: 1) NAPL bailing/recovery test at well H78B-8R, 2) Appendix IX+3 analysis and physical property analysis (i.e., specific gravity, viscosity, etc.) of NAPL, 3) Extent of NAPL through installation of additional wells to till surface.

GE Response:

As previously indicated, the results of assessment activities related to the NAPL detected at well H78B-8R are contained in the IRA Completion Report recently submitted by GE. Additional information specific to this EPA comment (e.g., physical properties of the NAPL and recovery testing) are provided in Attachment B. An updated top of till contour map is provided in Attachment C to this Addendum.

EPA Comment 5:

Page 3-2, Section 3.4.1: The purpose of the pre-design soil data is unclear. The data are presented, yet no evaluation of the data is presented. The Work Plan should combine the historical data and new data and provide an evaluation of these data. The objective of the pre-design soil data collection shall include the acquisition of geotechnical parameters which will be required for designing the landfill cap stability, etc. The permeability of the in-situ material at Hill 78 and underneath Building 71 shall be evaluated by using ASTM D-5084 with an appropriately specified confining stress.

GE Response:

The pre-design field investigations described in Section 3.4 of the Detailed Work Plan were implemented pursuant to a proposal contained in the March 1999 Conceptual Work Plan, which was approved by the EPA. The primary focus of the pre-design investigations was to obtain supplemental information concerning the presence of PCBs and other hazardous constituents that are present in the soils associated with the on-plant consolidation areas. The results of these investigations were provided in the Detailed Work Plan. With respect to the portion of the above EPA comment concerning geotechnical parameters (e.g., landfill cap stability, permeability of in-situ material, etc.), no specific pre-design activities were proposed by GE, required by EPA, or conducted. However, information concerning the general geologic and hydrogeologic conditions within the area are available from prior investigations and were supplemented by the recent pre-design activities related to groundwater conditions (i.e., monitoring well installation). This information will be considered as appropriate during future design activities associated with the consolidation areas.

EPA Comment 6:

Page 3-3: Provide a discussion regarding the current groundwater flow direction.

GE Response:

Attachment B to this Addendum, *Proposal for Future Groundwater Monitoring - Hill 78 and Building 71 Consolidation Areas* (Future Groundwater Monitoring Proposal), provides a discussion regarding the current groundwater flow direction in the vicinity of the consolidation areas, including maps depicting generalized groundwater flow direction.

EPA Comment 7:

Page 4-2, Section 4.3: GE shall perform pre-characterization sampling for the new storm sewer utility corridor in accordance with GE's Protocols for the Management of Excavation Activities, updated November 1996.

GE Response:

GE has completed the above-referenced pre-characterization sampling for the new storm sewer. The results of the sampling activities are included in Attachment D to this Addendum.

EPA Comment 8:

Page 4-3, Section 4.4: GE shall discuss with the Agencies Project Managers the well abandonment procedures prior to abandoning the Hill 78 wells. Eventually, the Sampling Analysis Plan (May 1994) Appendix I will have to be updated by GE to revise the well abandonment procedures.

GE Response:

Per the July 8, 1999 discussions with the EPA, GE will use the Massachusetts Department of Environmental Protection Standard References, Section 4.6 - Decommissioning of Monitoring Wells, when abandoning the Hill 78 wells. These procedures are included in Attachment E to this Addendum.

EPA Comment 9:

Page 5-1, Section 5.2.1: The appropriate mail code for Michael Nalipinski is (HBT). Please revise.

GE Response:

Agreed.

EPA Comment 10:

Page 5-11, Section 5.12: Reevaluate the diameter of deleterious material allowable in the consolidation area. Typically, the geotextile vendor has size requirements that should also be adhered to. The puncture requirements shall be evaluated using GRI test methods.

GE Response:

With respect to the preparation of the subgrade surface beneath the base liner system for the Building 71 Consolidation Area, all objects protruding from the prepared subgrade (e.g., stones, sticks, roots, etc.) will be removed. The overlying geotextile will not be installed until a compacted, smooth, uniform surface free from protruding objects that could damage the overlying geosynthetics is achieved.

EPA Comment 11:

Page 5-13, Section 5.15: Provide an estimated volume for the leachate storage facility at the Building 71 area. The collected leachate shall be periodically sampled and those results need to be compared to the groundwater analysis.

GE Response:

As discussed in the July 8, 1999 conference call with the EPA and subsequent meetings, the Detailed Work Plan focuses on those activities that are necessary to support the anticipated construction and use of the consolidation areas beginning in 1999, while future activities related to design and/or operation of the consolidation areas will be addressed in subsequent submittals to the EPA. This type of approach is evident in GE's proposed method for handling leachate that may be generated from the Building 71 consolidation area. In 1999, as part of the construction of portions of the Building 71 consolidation area, GE will install certain components of the future leachate management system, including collection laterals and a below-grade collection sump. From an operational standpoint, these components will be used, in combination with temporary collection pumps/piping and appropriate tanks, to collect and transfer any accumulated liquids to GE's existing 64-G groundwater treatment facility. As part of this operation, GE will document the rates/volumes of liquid that are transferred, as well as the characteristics of these liquids. Based on the information collected during this initial operational period, GE will assess the need for, scope, and timing for the installation of additional leachate management facilities.

EPA Comment 12:

Page 6-2, Section 6.3: The "elevated levels of Appendix IX+3 constituents" is too vague. GE should make this consistent with the Appendix IX+3 data review for Allendale School which specifies a screening evaluation for TCLP (i.e., 20x rule).

GE Response:

As discussed in Section 6.3 of the Detailed Work Plan, materials generated as a result of the response action activities will be characterized prior to transport to the consolidation areas. Accordingly, waste characterization activities will be consistent with the work plans developed for each RAA (e.g., Allendale School Property, Upper ½-Mile Reach, etc.).

EPA Comment 13:

Page 6-2, Section 6.3: The Work Plan should identify the procedures to be used to ensure consolidation of materials at the proper area (i.e., Hill 78 vs Bldg. 71).

GE Response:

Similar to a prior response, the characterization of materials for subsequent disposition will be conducted as part of the technical evaluations associated with each RAA. As discussed with the Agencies during the July 8, 1999 conference call, this approach allows pre-project evaluation and coordination and optimizes (to the extent possible) the activities to be conducted within the on-plant consolidation areas. At each RAA, protocols will be developed (e.g., colored cards, truck placarding, etc.) to ensure that TSCA materials are delivered to the Building 71 Consolidation Area, and non-TSCA materials are delivered to the Hill 78 Consolidation Area.

EPA Comment 14:

Page 6-3, Section 6.3: Question: Is the standard paint filter test based on a specific moisture content or should a standard be identified for moisture content for soils prior to placement? What will the disposition of the materials that exceed the moisture test?

GE Response:

The procedures for the Paint Filter Liquids Test (Method 9095A) are provided as Attachment F to this Addendum. Materials generated as a result of the response actions that contain visible free liquid or fail the Paint Filter Liquids Test will require dewatering (or other activities to lower the moisture content of the materials) prior to their transport to the consolidation areas. Again, this approach is anticipated to streamline operations to be conducted at the on-plant consolidation areas.

Describe Dewatering Procedures

EPA Comment 15:

Page 6-4, Section 6.7: Wind direction shall be monitored and air monitors shall be placed such that a minimum of one monitor is downwind at all times. The air monitoring program shall also be designed considering the air intakes at the U.S. Generating Facility.

GE Response:

As discussed during the July 8, 1999 conference call and consistent with the Detailed Work Plan, GE will conduct ambient air particulate monitoring at several locations around the consolidation areas. These locations were intended to provide downwind coverage in the event that wind direction shifts from its predominant easterly direction. As discussed during the conference call, in consideration of concerns related to the air intakes associated with Pittsfield Generating Company, LLP's facility, one ambient air monitoring location will be added at a location representative of the air subject to intake into the facility, while the remaining locations may be adjusted as necessary based on prevailing wind conditions in the area. A figure identifying the current air monitoring locations (in consideration of ongoing response activities at the Allendale School Property) is provided in Attachment G to this Addendum.

EPA Comment 16:

Section 6-8: The proposal to allow materials greater than 6-inches in the first lift seems excessive. Puncture calculations shall be provided that substantiate the appropriate particulate size which will not cause damage to the geosynthetic material. Use the GRI method to evaluate.

GE Response:

Design calculations supporting the installation of material with a maximum particle size of six inches in the first lift are provided in Attachment H of this Addendum. It should be noted that operational measures will be taken to prevent puncture of the underlying geosynthetics, including:

- Using only soil materials (i.e., no vegetative materials or building debris) during placement of the first lift;
- Using low-ground pressure equipment (e.g., bull dozers) to place the soil materials; and

- Maintaining a minimum two-foot lift thickness to ensure that large stones are supported by soil and point-loading conditions on the underlying geosynthetics are avoided.

EPA Comment 17:

Page 6-6, Section 6.10: Add a paragraph which discusses how dust generated from truck traffic will be addressed.

GE Response:

As shown on revised Figure 9 included as Attachment I to this Addendum, many of the site roads to be used during consolidation activities will be paved to control dust. Additionally, temporary access roads will be surfaced with a geotextile and 6 inches of gravel to aid in minimizing dust generation. However, as with any earthwork activity, dust may be generated that will require active mitigative measures. These measures may include:

- Spraying water on excavation faces, dozer blades during grading, and soil when unloading transport vehicles;
- Spraying water on backfill stockpiles and on backfill materials that have been placed in fill areas;
- Spraying water on access roads;
- Hauling soil materials in tarped vehicles;
- Sweeping roadways when visible amounts of soil begin collecting on the roadways;
- Restricting vehicle speeds to 5 miles per hour; and
- Covering soil piles with a layer of polyethylene after work activities cease for the day.

It should be noted that only the minimum amount of water necessary to control dust will be used in order to prevent potential erosion of the site soils.

EPA Comment 18:

Page 6-6, Section 6.11: Add a paragraph and modify the drawings as appropriate to address the flow of the surface water runoff and location of the retention basins.

GE Response:

See GE's response to EPA Comment 3.

EPA Comment 19:

Page 6-7, Section 6.14: The interim cover will not prevent the infiltration of precipitation. The interim cover should also include a design feature (i.e., 20 mil polyethylene sheeting) to prevent infiltration of precipitation to the degree practicable. See Significant Comment #4.

GE Response:

As discussed in an earlier response, depending on the time of year that an interim cover is installed, the cover will be seeded with a quickly germinating rye grass and covered with hay/straw to provide an erosion resistant vegetative cover that will promote runoff. If construction extends beyond October 15,

polyethylene sheeting or similar materials will be installed over the closed portions of the consolidation areas to minimize infiltration of precipitation.

EPA Comment 20:

Page 7-1, Section 7.2: The Restoration Activities Section shall be revised to include tasks which address NRD enhancements.

GE Response:

As a supplement to the forthcoming *Consent Decree* (CD) for the Pittsfield/Housatonic River Site, a *Statement of Work for Removal Actions Outside the River* (SOW) is also being prepared. The CD and SOW establish requirements related to NRD enhancement activities for the Hill 78 Consolidation Area. These requirements will be incorporated into future design activities related to that consolidation area (i.e., future submittals related to the final capping and restoration of the consolidation area).

Comment 21:

Page 8-1, Section 8.1: A submittal date for the "baseline" groundwater investigation and groundwater monitoring program proposal shall be specified.

GE Response 21:

The results of the "baseline" groundwater monitoring activities and a proposal for future monitoring are included as Attachment B to this Addendum (Future Groundwater Monitoring Proposal).

EPA Comment 22:

Page 8-1, Section 8.1: 1st para. 2nd sentence: the purpose of the program includes, "to assess what the base line groundwater conditions are at the areas". Also, same sentence add at the end, "....now and in the future, if necessary".

GE Response:

Agreed. These comments have been incorporated into the Future Groundwater Monitoring Proposal presented in Attachment B to this Addendum.

EPA Comment 23:

Page 8-1, 4th para.: Consistent with SOW Attachment H, GW-3 shall be used as a benchmark for consolidation area wells. The groundwater monitoring program proposal shall identify the statistical methods to be used to analyze groundwater data and shall propose when response actions are required to address "statistically significant" increases in groundwater concentrations.

GE Response:

Discussions regarding the future groundwater monitoring program are provided in Attachment B to this Addendum.

EPA Comment 24:

Page 8-2, Section 8.2: Any GE proposed response action shall be implemented subject to Agency approval. Include a response to Significant Issue #2 in this Section.

GE Response:

Information pertaining to the NAPL detected in Well H78B-8R was provided in the Immediate Response Action Completion Report transmitted to the Agencies on July 19, 1999. Additional information is also presented in Attachment B to this Addendum.

EPA Comment 25:

Table 1: The EPA will be providing comments relating to the ARARs Tables shortly in a future correspondence.

GE Response:

No response at this time.

EPA Comment 26:

Include a figure (or two) that depicts the overburden and bedrock water table maps. Also, include a figure identifying the till elevation contours beneath the Consolidation Areas.

GE Response:

A till elevation contour map is presented in Attachment C to this Addendum. Overburden groundwater elevation contour maps are presented in Attachment B to this Addendum (Future Groundwater Monitoring Proposal). There is insufficient bedrock well spacing and data to produce reliable bedrock water table maps.

EPA Comment 27:

Figure 1: The Site Location Map does not identify the facility per the definition of the CD.

GE Response:

A revised Figure 1 is included as Attachment J to this Addendum.

EPA Comment 28:

Figure 3: Define the thickness of the flexible membrane liner and sub base material. The EPA has recommended a 60 mil. flexible membrane.

GE Response:

Sixty-mil-thick HDPE FML will be used as shown in Attachment K to this Addendum.

EPA Comment 29:

Figure 7: Identify in the figure and text the inclusion of the Altresco well in the groundwater monitoring program.

GE Response:

The Altresco (currently Pittsfield Generating Company, LLP) well (i.e., ASWW-5) to be included in future groundwater monitoring has been identified in the proposed groundwater monitoring program provided in Attachment B to this Addendum. Note that as previously discussed with the Agencies, GE's proposal for groundwater monitoring in this area of the GE Plant Site calls for including the results of monitoring conducted by the Pittsfield Generating Company, LLP (in accordance with their operations/permit) and not GE's separate sampling and analysis of that well.

EPA Comment 30:

Figure 9: Define the proposed truck route for depositing material in the consolidation areas.

GE Response:

A revised Figure 9 depicting the proposed truck routes at the consolidation areas is included as Attachment I.

EPA Comment 31:

Attachment A, Technical Drawings, A-5: A low permeability soil plug is shown on the northwest side of the Consolidation Area but none is shown for a similar condition at the south end near the Storm Basin shall be included.

GE Response:

The low permeability soil plug at the northwest side of the Building 71 Consolidation Area is necessary to prevent stormwater from entering the consolidation area where the FML dips to accommodate the leachate collection piping network. The low permeability soil is used to form a continuous containment berm along the northwestern side of the consolidation area. A low permeability soil plug is not necessary at the southern corner since this is a permanent sidewall penetration for the leachate collection header pipe. A watertight HDPE boot will be fabricated for this penetration as shown on Technical Drawing 8.

EPA Comment 32:

Attachment A, Technical Drawings, A-5: Leachate pipes are shown which are 6-inch diameter with minimum slopes of 0.5%. No calculations are provided to substantiate pipe sizing or transmissivity of the drainage geocomposite for predicted leachate flows. In addition, pipe strength calculations should be provided for Consolidation Area loading either at a final grade or due to vehicular and equipment loads during construction or operations.

GE Response:

The above-referenced technical calculations are provided as Attachment L to this Addendum.

EPA Comment 33:

Provide calculations to demonstrate that adequate veneer stability exists between the respective interface layers of the components of the final cover systems on the 33% slope. The calculated requirements should be verified using proposed materials by testing in accordance with ASTM D-5321. The tests to evaluate the interface friction requirements may include Koerner, Hwu, Giroud, Bachus and Bonabarte methods.

GE Response:

The above-referenced technical calculations are provided as Attachment M to this Addendum.

EPA Comment 34:

At this time, there is a minimal potential that gas will be generated from the Consolidation Areas but this issue should be evaluated and discussed in the Detailed Work Plan.

GE Response:

As discussed with the EPA during our July 8, 1999 conference call, there is minimal potential for gas generation at the consolidation areas due to the limited amount of high-organic material that will be consolidated during the response action activities. Organic materials placed within the consolidation areas will generally be limited to materials cleared during the response actions (e.g., trees, roots, etc.) and wood debris generated during building demolition. To further minimize the potential for gas build-up, organic materials placed within the consolidation areas will be placed in such a manner as to avoid large pockets of organic matter. For example, the material will be placed in thin lifts (i.e., less than 3-inches thick) and spread out over the entire active area, and the size (diameter and/or length) of tree trunks and stumps will be minimized to the extent practicable.

EPA Comment 35:

Groundwater east of Building 71 (along the General Dynamics parking lot) needs to be monitored. GE's groundwater flow maps show an easterly component to groundwater flow. Also, the bedrock monitoring well shall be a component of evaluating the Consolidation Areas impact on groundwater.

GE Response:

Groundwater monitoring activities are discussed in the Attachment B to this Addendum. Updated groundwater flow maps incorporating data collected from new wells in the Building 71 area indicate that groundwater flow is predominantly from northeast to southwest.

EPA Comment 36:

As previously commented, there are not calculations provided to substantiate that the proposed thickness (e.g., min. 2 feet) of the final cover system will provide adequate protection from frost damage of the underlying geosynthetics. The preferred method to evaluate the frost protection issue is the Modified Berggren Equation.

GE Response:

The components and thickness of the final cap for the on-plant consolidation areas has been the subject of several discussions between GE and the Agencies over the last several months. From these discussions, a two-foot thick cap was agreed to and this information was presented in the March 1999 Conceptual Work Plan. The geosynthetic materials included within the final cover system consist of GDC, 60-mil-thick HDPE FML, and a GCL. These materials have demonstrated a resistance to frost penetration and freeze/thaw cycles, and therefore do not require the cover thicknesses typically associated with a compacted clay liner system. In support of the proposed two-foot-thick cover system, several relevant articles from the material manufacturers, as well governmental agencies, are included as Attachment N to this Addendum (note that pertinent information is underlined). In light of this information, GE will maintain a 2-foot thick cap thickness.

We trust that the contents of this letter will be sufficient to address the EPA's comments and allow GE to proceed with full-scale implementation of those on-plant consolidation activities necessary to support 1999 response actions. However, should additional information be necessary, please contact me with such a request.

Sincerely,

John F. Novotny

John F. Novotny, P.E.
Remediation Project Engineer

U:\PLH99\85691543.WPD

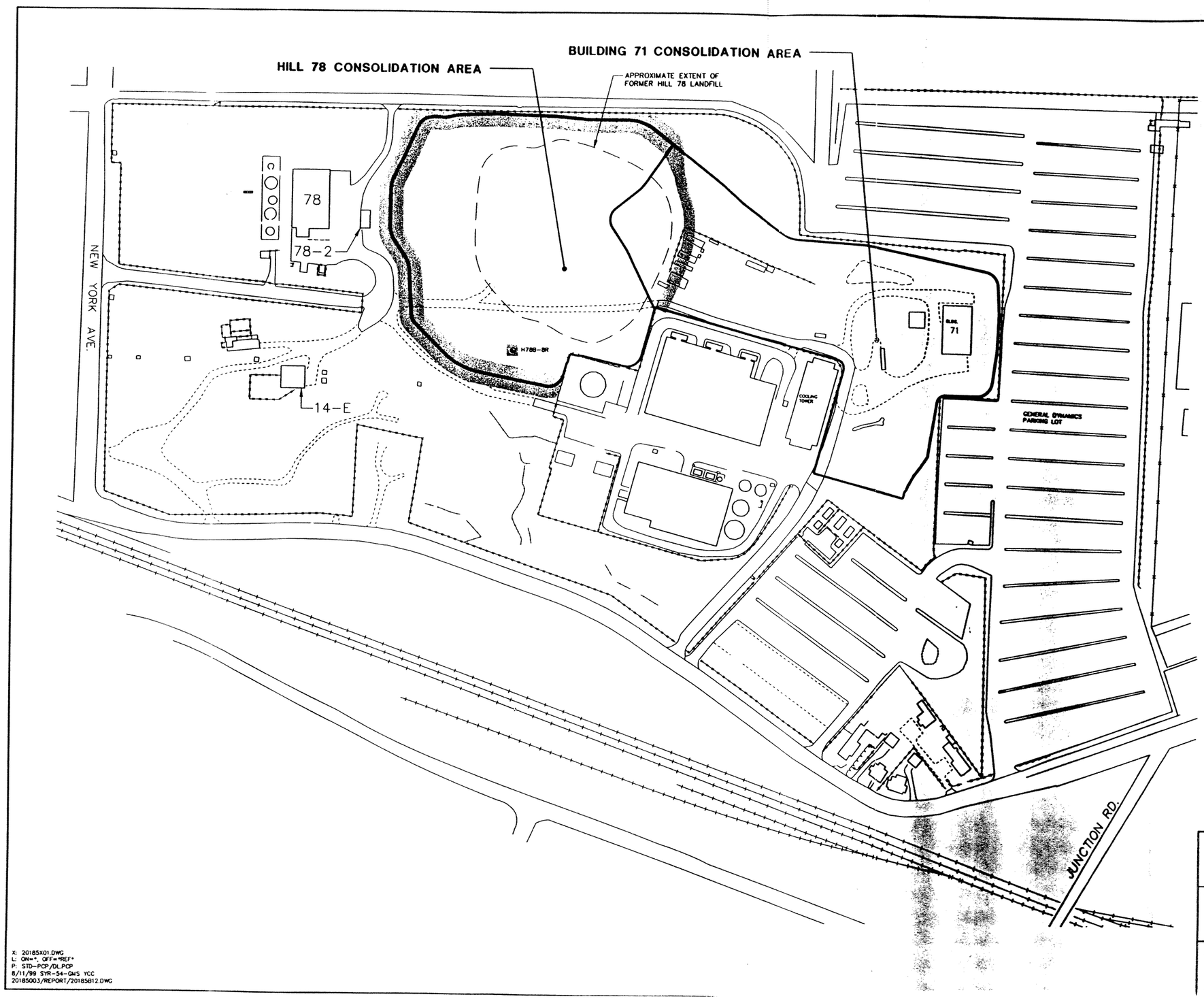
cc: Richard Cavagnero, EPA
Tim Conway, Esq., EPA
John Kilborn, Esq., EPA
Bryan Olson, EPA
Chet Janowski, EPA
J. Lyn Cutler, DEP
Robert Bell, DEP
Alan Weinberg, DEP
John Ziegler, DEP
Cynthia Huber, Esq., DOJ
Addie Fiske, Esq., DOJ
Matthew Brock, Esq., MAAG
Betsy Harper, Esq., MAAG
Steve Botts, EPA
Amy Legare, EPA
Mayor Gerald Doyle, City of Pittsfield
Thomas Hickey, City of Pittsfield
Pittsfield Commissioner of Public Health
Howard Bellman, Mediator
Gregory Sobel, Mediator
Jane Gardner, Esq., GE
Andrew Thomas, Jr., Esq., GE
Michael Carroll, GE
Andrew Silfer, GE
James Bieke, Esq., Shea & Gardner
Jeffrey Bernstein, Esq., Bernstein, Cushner & Kimmel
David Buente, Esq., Sidley & Austin
Lee dePersia, Weston
Robert Goldman P.E., Blasland, Bouck & Lee, Inc.
James Nuss P.E., LSP, Blasland, Bouck & Lee, Inc.
Public Information Repositories ECL-I-P-IV(A)(1)

Attachments

Attachment A

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Area Subject to Geophysical Survey - Hill 78 Consolidation Area



LEGEND:

- APPROXIMATE AREA OF PROPOSED CONSOLIDATION ACTIVITIES
- EXISTING SECURITY FENCE
- AREA SUBJECT TO GEOPHYSICAL SURVEY

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. -FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND, BOUCK & LEE, INC. (BBL) CONSTRUCTION PLANS, AND ON OBSERVATIONS DURING A SITE VISIT BY BBL PERSONNEL ON DECEMBER 3, 1997.
2. SITE BOUNDARIES ARE APPROXIMATE.
3. NOT ALL PHYSICAL FEATURES SHOWN.

100' 0 100' 200'
GRAPHIC SCALE

X: 20185X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL.PCP
8/11/99 SYR-54-GNS YCC
20185003/REPORT/20185B12.DWG

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

AREA SUBJECT TO GEOPHYSICAL SURVEY

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

1. Introduction

1.1 General

This *Proposal for Future Groundwater Monitoring - Hill 78 and Building 71 Consolidation Areas* (Future Groundwater Monitoring Proposal) describes the future groundwater monitoring activities proposed by the General Electric Company (GE) for two consolidation areas located within GE's Pittsfield, Massachusetts facility. Beginning in July 1999, GE initiated construction and use of these areas for the permanent consolidation of materials (soil, sediment, debris, etc.) generated during the performance of response actions within and around Pittsfield (henceforth referred to as the Pittsfield/Housatonic River Site, or the Site.) Prior to the initial construction/use of these consolidation areas, GE conducted a "baseline" groundwater monitoring program to supplement information available for the area of interest and further characterize current hydrogeologic conditions. That program was conducted in accordance with the protocols presented in a document entitled *Conceptual Work Plan for Future On-Plant Consolidation Areas* (Pre-Design Work Plan), which was submitted to and conditionally approved by the United States Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (together, the Agencies).

The "baseline" groundwater sampling program, conducted between June 14 and 17, 1999, involved a total of twelve monitoring wells selected to provide spatial representation of groundwater conditions on all sides of the consolidation areas (i.e., upgradient, downgradient, and cross-gradient) prior to construction of the consolidation areas. The locations of the wells are shown on Figure 1. Included in this program were four existing wells (78-1, 78-6, H78B-15, and NY-4) and eight new wells (OPCA-MW-1 to OPCA-MW-8) installed specifically for this monitoring program.

Based on the results of the "baseline" groundwater monitoring program (summarized in this document), GE has developed this Future Groundwater Monitoring Proposal for EPA review, comment, and approval. The primary objective of the future groundwater monitoring program is to periodically assess groundwater conditions at the site, compare these conditions with those observed during past monitoring activities, and identify potential changes in groundwater conditions which may be related to consolidation activities. This Future Groundwater Monitoring Proposal describes the scope and results of the "baseline" groundwater monitoring activities, and presents and discusses the proposed groundwater monitoring program to be conducted in conjunction with ongoing and future consolidation activities.

In addition to presenting the results of the "baseline" groundwater sampling program and the proposed future groundwater monitoring program, this Attachment also provides information pertaining to other ancillary groundwater-related issues in this area. This information, prepared at the request of the EPA, consists of a summary of supplemental investigations related to the occurrence of LNAPL in well H78B-8R (located within the horizontal extent of the future Hill 78 Consolidation Area).

2. Summary of "Baseline" Monitoring Program

2.1 General

The activities conducted as part of the "baseline" groundwater monitoring program involved well installation and development, the measurement of groundwater elevations, and the collection of groundwater samples from select monitoring wells. Figure 1 presents the well locations included in the baseline monitoring activities described in this report, as well as other monitoring locations in the area. This section discusses the field procedures used to install new wells, measure site groundwater elevations and collect groundwater samples, and also presents the results of these investigations.

In addition, the results of supplemental investigations regarding the detection of LNAPL at well H78B-8R are presented in Section 2.6. These investigations, consisting of analysis of physical characteristics of the LNAPL and a field test of LNAPL recovery rates, were proposed as a follow-up to an Immediate Response Action conducted at this location. Although these activities were conducted separately from the "baseline" groundwater monitoring program, the results are summarized in this document in response to a request by EPA.

2.2 Monitoring Well Installation and Development

Eight new monitoring wells (OPCA-MW-1 through OPCA-MW-8) were installed between May 26 and June 8, 1999. Each well was constructed with 2-inch diameter Schedule 40 PVC casing and 10-feet of well screen placed to intercept the water table. The water table was encountered at depths of between 10 and 18 feet during well installation. Soil samples were collected continuously during the drilling of each well boring. Each soil sample was screened with a photoionization detector (PID), and the lithological characteristics of each sample was described in the field by a geologist. Well construction information for each of the new and existing monitoring wells included in the groundwater sampling program is presented in Table 1, and well installation logs for the new wells are included in Appendix A.

Following installation, the eight new wells were developed to clear fine-grained materials from the well screens and surrounding sand packs. Well development activities were conducted between June 4 and 10, 1999. A surface inertial pump, dedicated polyethylene tubing, and surge blocks were utilized. Each well was surged in 2-foot intervals over the entire saturated portion of the well screen to force water in and out of the well screen and surrounding sand pack. Groundwater was then removed from the wells until the discharge was relatively free of sediment. Following development, the wells were allowed to stabilize for several days prior to sample collection.

2.3 Groundwater Elevations

Groundwater elevations were recently measured in this area on two occasions: on May 25, 1999 from several wells across the Hill 78 Area and the adjacent (to the north) Allendale School Property; and on June 17, 1999 from the twelve "baseline" groundwater monitoring wells surrounding the future on-plant consolidation areas. The groundwater elevation contours derived from the earlier round of measurements are presented on Figure 2. Table 1 summarizes the June 17, 1999 "baseline" investigation groundwater level data and the associated groundwater elevations. These data were used to generate the groundwater elevation contours which are presented on Figure 3.

Groundwater elevations ranged from an approximate elevation of 1,015 feet (above mean sea level) north of the site to approximately 994 feet south of the site. The groundwater flow patterns appear to generally correlate with the site surface and top of till topography, with the general flow direction being from northeast to southwest. The groundwater elevation contours collected during the "baseline" monitoring program activities (June 17, 1999) also

correlate with data obtained on May 25, 1999 from several wells at the Hill 78 Area and the Allendale School Property.

2.4 Groundwater Sample Collection

Prior to groundwater sample collection, each well was screened for organic vapors with a PID. The resulting PID readings ranged from 0 to 0.3 PID units, which were consistent with background readings measured in the vicinity prior to the well screening.

Following PID screening, each monitoring well was purged utilizing low-flow purging techniques. Each well was purged until the measured field parameters (including temperature, pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) stabilized, or the well was pumped dry. Table 2 presents a summary of the field measurement results.

Following well purging, groundwater samples were collected from each well using low-flow sampling techniques. Each of the samples was packed on ice and submitted for laboratory analysis of those constituents listed in Appendix IX of 40 CFR 264, plus 2-chloroethyl vinyl ether, benzidene, and 1,2-diphenylhydrazine (Appendix IX+3), excluding herbicides and pesticides. The results of these analyses are summarized in Section 2.5. Field sampling records are presented in Appendix B. Field sampling procedures were conducted in accordance with GE's Sampling and Analysis Plan/Data Collection and Analysis Quality Assurance Plan (SAP/DCAQAP) (draft dated October 1998, pending revisions requested by the USEPA).

2.5 Groundwater Analytical Results

Table 3 provides a summary of the results of the groundwater sample analyses for each sampling location. This information is summarized below:

- PCBs were detected (Aroclor 1254 only) in 6 of the 12 monitoring wells at total concentrations ranging from 0.000035 parts per million (ppm) to 0.00089 ppm;
- No volatile or semi-volatile organic compounds were detected in any of the groundwater samples;
- One sample (OPCA-MW-1) exhibited estimated concentrations or total tetrachlorodibenzofuran and heptachlorodibenzofuran of 0.000009 parts per billion (ppb) and 0.0000078 ppb, respectively. One other sample (OPCA-MW-2) exhibited an estimated concentration of heptachlorodibenzofuran of 0.0000013 ppb, but the duplicate of this sample did not exhibit a presence of this constituent. No other polychlorinated dibenzofurans were detected in any of the groundwater samples;
- Barium was detected in all 12 samples at concentrations ranging from 0.0095 ppm to 0.086 ppm;
- Zinc was detected in 4 of the 12 samples at concentrations between 0.029 ppm and 0.088 ppm; and
- Arsenic was detected in one sample (78-6) at a 0.032 ppm.

PCBs were detected in excess of the MCP GW-3 Standard of 0.0003 ppm at only one location, OPCA-MW-4. It should be noted that the groundwater collected from this well was not filtered prior to analysis and that particulate matter surrounding the well screen may have contributed to the concentration of the PCBs detected in the sample.

All inorganics which were detected in the groundwater samples were observed at concentrations less than the respective MCP GW-3 Standards.

2.6 LNAPL Monitoring and Assessment

On May 27, 1999, GE obtained knowledge of, and provided oral notification to the Massachusetts Department of Environmental Protection (MDEP), that approximately 0.5 feet of LNAPL was present in monitoring well H78B-8R, (in response, the MDEP assigned Release Tracking Number 1-12954 to this specific release notification). As a follow-up to the oral notification, GE has conducted several activities as part of an Immediate Response Action (IRA), pursuant to Part 40.0410 of the Massachusetts Contingency Plan (MCP). LNAPL samples were submitted for laboratory analysis and monitoring and recovery of LNAPL from this well has been performed manually on a weekly basis since it's initial detection. During each monitoring event, groundwater level and LNAPL thickness measurements were recorded, and any accumulations of LNAPL were removed. The recovered LNAPL was transported to GE's Building 78 RCRA/TSCA permitted storage facility for subsequent off-site disposal. The details of these activities were summarized in an IRA Completion Report, submitted to the Agencies on July 19, 1999.

In addition to summarizing the results of the monitoring/assessment activities conducted by GE up until the date that the IRA Completion Report was submitted, GE identified several future activities that would be performed:

- Continue weekly monitoring and LNAPL removal at well H78B-8R;
- Further define potential LNAPL recovery rates and volumes by performing a multiple-day LNAPL recovery test;
- Implement a monthly monitoring program at wells H78B-8, OPCA-MW-2, and OPCA-MW-3; and
- Collect additional LNAPL samples to be analyzed for physical characteristics, including specific gravity and viscosity.

The results of the LNAPL physical property analysis and the LNAPL recovery test assessment are contained in this report and discussed below, while the results of future weekly and monthly monitoring will be presented to the Agencies in the monthly progress reports for the Hill 78 Site.

Based on the results of analyses conducted during the IRA activities, the LNAPL observed at this site contains PCBs and PAHs (with lesser amounts of other constituents), and is present at a limited volume, confined to the immediate vicinity of well H78B-8R. The presence of LNAPL has not been observed at the nearest monitoring locations downgradient of this well, and downgradient groundwater analytical results do not show any indications of an impact to the dissolved phase water quality.

To supplement the existing chemical data collected from the H78B-8R LNAPL, GE has collected additional LNAPL samples for physical properties testing. These samples were collected on July 19, 1999 and allowed to sit undisturbed for several days prior to analysis, to permit the LNAPL to completely separate from the aqueous phase portion of the sample. The specific gravity of the LNAPL sample, measured with an Anton Parr Density Meter (Model DMA 35) at 23.5 degrees Centigrade, was 0.934. Viscosity was measured with a Cannon-Fenske viscometer mounted in a constant temperature bath at 100 degrees Fahrenheit. The results of the initial test, as well as from a duplicate test, showed a dynamic viscosity of 11.1 centistokes for the LNAPL sample.

An LNAPL recovery test assessment was conducted at well H78B-8R from July 19 to 21, 1999 in order to evaluate the feasibility of installing an automated LNAPL recovery system at this location. The test involved manual removal of LNAPL from well H78B-8R and observations of the rate at which LNAPL returned to the well. LNAPL monitoring and removal was initially conducted on an hourly basis. Adjustments to the LNAPL removal schedule were made following the first several monitoring intervals, based on the limited LNAPL recovery observed. For the

final two days of the test, monitoring was generally conducted at two-hour intervals for a seven-hour period each day. The data from this LNAPL recovery test is summarized in Table 4, and discussed below.

At the start of the recovery test, an LNAPL thickness of 0.06 feet was present in the well. A volume of 0.04 liters of LNAPL was removed to clear the well and initiate monitoring of the recovery. After a period of one hour, an LNAPL thickness of 0.02 feet was measured in the well, and 0.02 liters were removed from the well. The next one-hour interval showed an LNAPL recovery of 0.01 feet (and corresponding removal of 0.01 liters). Following this removal, no LNAPL accumulations were detected in the well for between 29 and 46 hours, as no LNAPL was present at the end of the second day of testing (29 hours later), but a thickness of 0.01 feet was observed during the first observation period on the third day (46 hours since the previous removal interval). This thin layer of LNAPL was allowed to remain in the well to allow observations of recovery rates. The LNAPL thickness remained constant for a period of 5 to 6 hours, at which time a thickness of 0.02 feet was observed. After this accumulated LNAPL was removed (0.02 liters), no LNAPL returned to the well for the duration of the test.

Overall, approximately 0.09 liters of LNAPL were removed from the well over a 55-hour period during the recovery test. However, approximately half of this LNAPL had already accumulated in the well before the test began. Utilizing only LNAPL which accumulated in the well during the recovery test, the average LNAPL recovery rate over the length of the test was calculated at approximately 0.00576 gallons per day.

Based on the limited quantities of LNAPL that was recovered during this test, the installation of an automated LNAPL removal system would not be a practical approach to address this LNAPL occurrence. Rather, GE proposes to continue the ongoing weekly monitoring program in place at this location, and to remove any accumulations of LNAPL.

3. Proposed Groundwater Monitoring Program

3.1 General

This section describes the groundwater monitoring program proposed by GE during the active use of the consolidation areas. The overall purpose of this program is to assess potential changes in groundwater conditions due to consolidation activities at these areas. In addition, the results of the monitoring program will provide a groundwater data set that can support evaluations concerning the need for further response actions or modifications to future monitoring activities, now and in the future, if necessary. This proposal identifies the particular monitoring wells to be sampled, the frequency of groundwater monitoring for these wells, and the list of constituents for which the groundwater samples will be analyzed. All monitoring wells that were utilized during the "baseline" monitoring investigation will initially be included in this monitoring program.

The following sections present a summary of the proposed groundwater monitoring program, including the proposed procedures and criteria for evaluating the sampling data from each monitoring event, as well as the response actions that GE will consider and propose to the EPA, as appropriate, in the event that a potentially significant increase in dissolved-phase constituents is detected in the sampling results from a given event, relative to prior data. This program shall be enacted during the period of active use of the consolidation areas. Upon closure of the consolidation areas, the results of this monitoring program will be utilized to develop a post-closure groundwater monitoring program.

3.2 Groundwater Monitoring During Active Consolidation Activities

Initially, each of the twelve wells monitored during the "baseline" program will be sampled during active consolidation operations. Groundwater samples will be collected utilizing low-flow sampling techniques on a semi-annual basis, beginning in October 1999. This sampling will be conducted in the spring and fall of each year, generally during the months of April and October. All samples will be analyzed for PCBs and the volatile organic compounds, semivolatile organic compounds, and metals listed in Appendix IX of 40 CFR 264, plus 2-chloroethyl vinyl ether, benzidene, and 1,2-diphenylhydrazine (Appendix IX+3). Both filtered and unfiltered samples will be analyzed for PCBs and metals. Additionally, groundwater samples from wells OPCA-MW-1 and OPCA-MW-2 will be analyzed for PCDDs/PCDFs. In future monitoring rounds, other parameters and locations may be proposed to be added or deleted from the program by GE, based on the results of subsequent sampling events and potential modifications to the usage of the on-plant consolidation areas. Any such changes to the groundwater monitoring program would be proposed in the reporting associated with each monitoring event, but would not be implemented until approved by the EPA.

To provide information on overall groundwater flow patterns near the consolidation areas, depth to water data will be taken at each of the 12 wells proposed for the monitoring program at a minimum, regardless of any potential reductions to the list of wells which are proposed for sampling and analysis in any particular round.

3.3 NAPL Monitoring

LNAPL has been observed in one monitoring well (H78B-8R) located within the limits of the on-plant consolidation areas. The groundwater elevation and LNAPL thickness is currently measured in this well on a weekly basis, and any observed quantities of LNAPL are removed. In addition, in the July 19, 1999 IRA Completion Report, GE proposed to monitor three other wells (H78B-8, OPCA-MW-2, and OPCA-MW-3) for the presence of LNAPL on a monthly basis. These programs will continue for the time being, and the results will be reported in the monthly progress reports for overall work at the Hill 78 Area.

In the event that any new occurrences of NAPL are detected during the course of the on-plant consolidation area groundwater monitoring program, GE shall add any such well to the proposed plant-wide groundwater and NAPL monitoring program which is outlined in Attachment H to the SOW. All subsequent notification and response activities will be conducted under the procedures approved for that program.

3.4 Groundwater Performance Standards

The proposed groundwater quality Performance Standards to be utilized in this program are based on the groundwater classification categories designated in the MCP (310 CMR 40.0932) that are relevant to the consolidation areas. These categories are as follows:

- GW-2: Groundwater that is a potential source of hazardous vapors to indoor air; groundwater shall be classified as GW-2 if located within 30 feet of an existing occupied building or structure and the average annual depth to groundwater is 15 feet or less. These locations shall be GW-2 compliance points. Although none of the wells included in this groundwater monitoring program fit this criteria, data from three wells (OPCA-MW-4, OPCA-MW-5, and H78B-15) which are positioned slightly over 30 feet upgradient of buildings shall be used as a benchmark against the GW-2 standards.

- GW-3: All groundwater at the consolidation areas shall be classified as GW-3 because it is a potential source of discharge to surface water. The GW-3 standard shall be used as a benchmark to evaluate the groundwater data at locations within the interior of the GE facility. A separate groundwater monitoring program (Technical Attachment H to *Statement of Work for Removal Actions Outside the River*) is proposed to monitor for compliance with the GW-3 standards at the perimeter of the GE site.

The MCP specifies certain default "Method 1" groundwater standards for both GW-2 and GW-3 groundwater. It also allows for the establishment of alternative, site-specific GW-2 and GW-3 groundwater standards, based on a site-specific risk assessment. GE shall initially utilize the Method 1 standards set out in the MCP to evaluate groundwater quality in this program. Specifically, GE shall initially utilize the Method 1 GW-2 standards to evaluate GW-2 groundwater and the Method 1 GW-3 standards to evaluate GW-3 groundwater.

No volatile organic compounds were detected in groundwater during the "baseline" sampling event. However, if in future monitoring, volatile organic compounds are detected in GW-2 groundwater at the consolidation areas for which Method 1 GW-2 standards do not exist, or alternative standards have not been approved by EPA, GE shall propose to develop a Method 2 GW-2 groundwater standard for such compounds using the general procedures set forth in 310 CMR 40.0983, an alternative procedure approved by EPA, or provide a rationale of why a Method 2 GW-2 standard should not be developed.

For compounds detected in GW-3 groundwater for which Method 1 GW-3 standards do not exist or alternative standards have not been approved by EPA, GE shall not develop a Method 2 GW-3 standard unless the presence of the compound is shown to be attributable to consolidation activities at the consolidation areas following evaluation of the groundwater results (as discussed in Section 3.5). However, if necessary, GE shall propose to develop a Method 2 GW-3 groundwater standard for such compounds using the general procedures set forth in 310 CMR 40.0983, or an alternative procedure approved by EPA. It should be noted that no such compounds were detected in groundwater during the "baseline" sampling event.

In the event that the Method 1 (or 2) groundwater standards are exceeded for any constituent(s) during the course of this program, or other groundwater monitoring programs in effect at the site (i.e., programs proposed under the SOW) GE may develop and propose to EPA for approval risk-based alternative GW-2 and/or GW-3 standards, based on a site-specific (e.g., Method 3) risk evaluation, taking into account relevant factors including but not limited to, for GW-

2 standards, an evaluation of the risks due to potential volatilization of constituents in groundwater into the indoor air of nearby buildings and, for GW-3 standards, impacts to adjacent surface waters, sediments, and biota. Upon EPA approval, such alternative risk-based GW-2 and/or GW-3 standards shall be utilized in lieu of the Method 1 GW-2 standards or Method 1 (or 2) GW-3 standards.

The Performance Standards for groundwater quality for the consolidation areas shall consist of the following:

1. For groundwater located within 15 feet or less from the ground surface and within 30 feet of an existing occupied building, achievement of the Method 1(or 2) GW-2 standards or, upon Agency approval, alternative risk-based GW-2 standards or a demonstration that constituents in the groundwater do not pose an unacceptable risk to occupants of such building via volatilization and transport to the indoor air of such building. These Performance Standards shall apply to wells OPCA-MW-4, OPCA-MW-5, and H78B-15, which although located slightly more than 30 feet from occupied buildings, are positioned in the closest practical locations upgradient of these buildings and will be utilized as GW-2 sentinel wells.

2. For all groundwater at consolidation areas, achievement of the Method 1 (or 2) GW-3 standards or, upon Agency approval, alternative risk-based GW-3 standards at the perimeter of the property boundary (i.e. wells 78-1, 78-6, and NY-4, as specified in Technical Attachment H to *Statement of Work for Removal Actions Outside the River*). The results of groundwater monitoring conducted under this program at wells not located along the property shall be evaluated against the applicable GW-3 standards as a benchmark.

3.5 Evaluation of Groundwater Results

Upon receipt of sampling data from each monitoring event, GE shall evaluate whether or not the applicable GW-2 Performance Standards/benchmarks have been exceeded at the sentinel monitoring wells. Further, in its report on the monitoring event, GE shall propose appropriate interim response actions to address any exceedance of the GW-2 Performance Standards. Such interim response actions may include resampling of the groundwater, increase in sampling frequency, additional well installation near potentially-impacted buildings (including sampling and analysis), and/or soil gas sampling. Upon Agency approval, GE shall implement the approved interim response actions.

Upon obtaining knowledge of sampling data from a well containing Category GW-2 groundwater within 30 feet of a school or occupied residential structure (should such wells be installed in response to data obtained from a GW-2 sentinel well) and having a total VOC concentration of equal to or greater than 5 parts per million, GE shall notify the Agencies within seventy-two hours unless such exceedance was previously observed and reported to EPA. GE will provide the data from each such event in the next monthly progress report for overall work at the Site. Subsequent exceedances for a given well will also be indicated in the next monthly progress report for the site. Further, in its report on the monitoring event, GE shall propose appropriate interim response actions to address any exceedance of the GW-2 Performance Standards. Such interim response actions may include resampling of the groundwater, increase in sampling frequency, additional well installation near potentially-impacted buildings (including sampling and analysis), soil gas sampling, desk-top modeling of potential volatilization of chemicals from the groundwater to the indoor air of nearby occupied buildings, sampling of the indoor air of such buildings, an evaluation of the potential risks related to volatilization to such indoor air, and/or the development and proposal of a risk-based alternative GW-2 standard (if not already established). Upon Agency approval, GE shall implement the approved interim response actions.

Upon receipt of sampling data from each monitoring event, GE shall also evaluate whether or not the applicable GW-3 Performance Standards/benchmarks have been exceeded at the monitoring wells. GE shall provide notification of any previously unobserved exceedance of the applicable GW-3 Performance Standard/benchmark from each such

event in the next monthly progress report for overall work at the Site. An evaluation of potential response actions relating to any exceedances of the GW-3 Performance Standards/benchmarks shall be made in the summary report for the monitoring event.

If an exceedance of a UCL is indicated in a groundwater sample from a given well, and such exceedance was not previously observed, GE shall notify the Agencies within fourteen days. GE will also provide the data from each such event in the next monthly progress report for overall work at the Site. Subsequent exceedances of a UCL for a given well shall be identified in the next monthly report. The monthly progress report for overall work at the site shall also identify any wells and provide the sampling results for all constituents which exceeded the applicable GW-2 or GW-3 standards.

Finally, upon receipt of data from each monitoring event, GE shall, on a location-by-location basis, compare the data from the current monitoring event with the prior monitoring data and evaluate using an appropriate statistical approach. Specifically, during the first year of the monitoring program, GE shall compare the results from each event with the "baseline" monitoring data. Thereafter, as the groundwater database is updated, GE shall compare the results from each monitoring event to the entire prior database, focusing on long-term temporal or spatial trends. These comparisons shall be performed, using appropriate statistical techniques (based on the data distribution), to identify instances in which the current data indicate an anomalous increase in the concentrations of dissolved-phase constituents relative to prior monitoring results. In making these comparisons, GE shall focus in particular on whether the data indicate that the increase is likely attributable to activities at the consolidation areas.

The statistical analysis shall focus on intra-well comparisons for selected critical parameters (i.e., parameters of concern). As sufficient data becomes available, statistical evaluations shall be made regarding the presence or absence of seasonality and trends. In wells exhibiting no trends, data means and variances shall be computed for parameters of concern for which there are greater than 50 percent detections for a particular constituent. Once trends occur, plotting of the data and regression analysis shall be performed. A moving average presentation of regularly spaced data may be utilized as an alternate to directly correlating data for seasonality.

If a statistically significant increase in dissolved-phase constituents is detected at any well in the most recent sampling results relative to prior data and the applicable groundwater quality Performance Standards/benchmarks are exceeded at the location in question, GE shall conduct the following activities:

- An evaluation of overall groundwater conditions within the consolidation areas to ascertain if the elevated sampling data were detected elsewhere and uniformly or if the elevated data are isolated to a specific monitoring location;
- A review of the recent sampling results with respect to the sampling data available from comparable sampling periods (i.e., results from sampling conducted during a similar time of year); and
- An evaluation of the potential presence of an upgradient "source" that could explain the increase in groundwater concentrations.

In its report on the monitoring event, GE shall provide a possible explanation(s) for any such observed increase in concentrations in the sampling data. If the Agencies determine that the elevated sampling data are likely attributable to consolidation activities and not due to inherent variations in the field or laboratory procedures or to historical variations in the monitoring results, GE shall propose to the Agencies for approval one of more of the following actions, and shall implement the Agency-approved actions:

- Resampling of the location and constituent(s) of interest;

- Soil sampling of recent fill deposited at the consolidation areas in locations upgradient of the affected wells;
- Increasing the frequency of monitoring at the location(s) in question;
- Additional evaluation activities in the area of interest, including but not limited to, the installation and sampling of new permanent or temporary monitoring wells;
- Evaluation of whether the groundwater in which the increase has been found is affecting any adjacent groundwater, surface waters, sediments and/or biota, including, if appropriate, sampling of such waters, sediments, sediment pore water (using seepage meters), and biota, including toxicity testing;
- Evaluation of active response actions to contain and/or recover the affected groundwater or to address potential sources if identified; and/or
- Work stoppage at the consolidation areas.

3.6 U.S. Generating Company Well Monitoring Program

Non-contact cooling water for the U.S. Generating Company's Pittsfield co-generation plant is supplied by four wells located near the proposed on-plant consolidation areas. Well ASW-5 is the primary source of this cooling water. Groundwater from well ASW-5, as well as three cooling water discharge samples, are sampled by U.S. Generating Company on a semi-annual basis in accordance with an existing permitted program. The ASW-5 sample is collected as a grab sample, while the cooling water discharge samples consist of three 24-hour composite samples. Each of these samples are analyzed for PCBs by USEPA Method 608 (Organochlorine Pesticides and PCBs) and for volatile organic compounds using USEPA Method 624 (Purgable Organics).

3.7 Reporting

Upon receipt from the laboratory, the groundwater monitoring data collected by GE shall be presented in the next monthly progress report for overall work at the site, as previously stated. In addition, following each monitoring event, GE will prepare and submit to The Agencies a summary report describing the field activities, presenting the sampling results, and presenting the results of the required evaluations of the monitoring data.

GE shall provide an evaluation of any exceedances of Performance Standards/benchmarks, if detected, and discuss the potential that the exceedance may be attributable to activities at the consolidation areas. If necessary, GE may also propose response actions if the data indicate an exceedance which is likely attributable to activities at the consolidation areas. In such reports, GE may also propose modifications to the groundwater monitoring program, including, but not limited to, changes in the wells to be monitored or constituents to be analyzed for.

In addition, GE shall provide the analytical results from deep water supply well ASW-5, which is monitored by the U.S. Generating Company on a semi-annual basis, as discussed in the previous section. These results will be presented in the next monthly progress report for overall work at the site following the receipt of the analytical data by GE, and will also be included in the next semi-annual on-plant consolidation area groundwater monitoring report.

3.8 Groundwater Monitoring During Post-Closure Period

Following the completion of consolidation activities and closure of the consolidation areas, GE will submit a proposal to The Agencies for a post-closure groundwater monitoring program for the consolidation areas. That proposal will include a statistical assessment of all prior monitoring data, and will present an evaluation of, and proposed plan for,

post-closure future groundwater monitoring. It will also identify, for the post-closure monitoring program, the specific monitoring well locations, the frequency of future monitoring and reporting, the constituents slated for analysis, the procedures for evaluation of the groundwater data, and the criteria for further response actions.

Tables

TABLE 1

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS
PROPOSED GROUNDWATER MONITORING PROGRAM

SUMMARY OF MONITORING WELL SPECIFICATIONS

WELL ID	WELL DIAMETER (Inches)	GROUND ELEVATION (Feet AMSL)	MEASURING POINT ELEVATION (Feet AMSL)	DEPTH TO TOP OF SCREEN (Feet BGS)	SCREEN LENGTH (Feet)	TOP OF SCREEN ELEVATION (Feet AMSL)	BASE OF SCREEN ELEVATION (Feet AMSL)	DEPTH TO WATER (Feet BMP)	DEPTH TO WATER (Feet BGS)	GROUND-WATER ELEVATION (Feet AMSL)
OPCA-MW-1	2	1,017.1	1,019.65	20.1	10	997.0	987.0	10.27	7.72	1,009.38
OPCA-MW-2	2	1,017.3	1,019.58	13	10	1,004.3	994.3	17.58	15.30	1,002.00
OPCA-MW-3	2	1,015.3	1,014.87	18	10	997.3	987.3	20.59	20.97	994.28
OPCA-MW-4	2	1,019.2	1,018.71	12	10	1,007.2	997.2	11.91	12.42	1,006.80
OPCA-MW-5	2	1,017.6	1,017.07	9.8	10	1,007.8	997.8	12.64	13.20	1,004.43
OPCA-MW-6	2	1,022.7	1,022.10	15	10	1,007.7	997.7	17.03	17.62	1,005.07
OPCA-MW-7	2	1,026.9	1,026.40	14	10	1,012.9	1,002.9	14.89	15.42	1,011.51
OPCA-MW-8	2	1,027.9	1,027.57	13.5	10	1,014.4	1,004.4	12.66	12.97	1,014.91
78-1	4	1,027.4	1,026.34	8	15	1,019.4	1,004.4	11.39	12.45	1,014.95
78-6	4	1,013.1	1,011.99	3	15	1,010.1	995.1	8.65	9.76	1,003.34
H78B-15	0.75	1,009.8	1,012.73	6	10	1,003.8	993.8	15.07	12.14	997.66
NY-4	4	1,024.8	1,024.53	17	15	1,007.8	992.8	9.91	10.18	1,014.62

NOTES:

1. Depth to groundwater measurements collected by Blasland, Bouck & Lee, Inc. on June 17, 1999.
2. NA: Not Available.
3. Feet AMSL: Feet above Mean Sea Level.
4. Feet BGS: Feet Below Ground Surface.
5. Feet BMP: Feet Below Measuring Point.

TABLE 2

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

FIELD PARAMETER MEASUREMENTS

Well Number	PID Headspace (PID Units)	Turbidity Measurement (NTU)	Temperature (degrees Celsius)	pH	Specific Conductivity (ms/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)
OPCA-MW-1	0.2	16.6	12.67	7.33	0.426	118.5	8.41
OPCA-MW-2	0.2	46.7	12.51	6.75	0.960	127.1	2.41
OPCA-MW-3	0.2	46.6	13.29	6.66	0.735	91.5	0.61
OPCA-MW-4	0.2	13.1	13.86	6.87	0.869	111.7	2.23
OPCA-MW-5	0.1	44.6	14.84	6.91	0.636	-6.9	3.65
OPCA-MW-6	0.1	28.6	13.31	7.32	0.522	90.2	9.56
OPCA-MW-7	0.2	7.8	14.14	6.90	1.344	15.15	6.33
OPCA-MW-8	0.2	22.2	14.93	7.22	2.003	98.9	7.47
78-1	0.1	16.8	13.47	6.68	0.672	134.8	2.99
78-6	0.3	101.4	16.75	6.70	2.209	-100.0	2.73
H78B-15	0.3	17.0	13.82	6.34	2.443	205.6	5.17
NY-4	0.0	38.8	13.07	7.62	0.380	155.2	2.04

Notes:

1. Well parameters were monitored continuously during purging by low-flow techniques. Final parameter readings are presented.

TABLE 3

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

SUMMARY OF APPENDIX IX+3 CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES - JUNE 1999
(Results are presented in dry-weight parts per million, ppm)

Sample ID Date Collected	MCP GW-3 Standard	78-1 06/14/99	78-6 06/16/99	H78B-15 06/16/99	NY-4 06/14/99
Volatile Organics					
None Detected	--	--	--	--	--
Semivolatile Organics					
None Detected	--	--	--	--	--
PCBs					
Aroclor-1254	--	ND(0.00010)	ND(0.000050)	0.000035 J	0.00012
Total PCBs	0.0003	ND(0.00010)	ND(0.000050)	0.000035	0.00012
Furans					
2,3,7,8-TCDF	--	ND(0.00000000060)	ND(0.0000000032)	ND(0.0000000015)	ND(0.0000000020)
TCDFs (total)	--	ND(0.00000000060)	ND(0.0000000032)	ND(0.0000000015)	ND(0.0000000020)
1,2,3,7,8-PeCDF	--	ND(0.0000000021)	ND(0.0000000079)	ND(0.0000000036)	ND(0.0000000074)
2,3,4,7,8-PeCDF	--	ND(0.0000000020)	ND(0.0000000083)	ND(0.0000000034)	ND(0.0000000069)
PeCDFs (total)	--	ND(0.0000000021)	ND(0.0000000083)	ND(0.0000000036)	ND(0.0000000074)
		ND(0.0000000060)	ND(0.0000000042)	ND(0.0000000017)	ND(0.0000000021)
1,2,3,6,7,8-HxCDF	--	ND(0.0000000062)	ND(0.0000000043)	ND(0.0000000017)	ND(0.0000000022)
1,2,3,7,8,9-HxCDF	--	ND(0.0000000059)	ND(0.0000000051)	ND(0.0000000023)	ND(0.0000000021)
2,3,4,6,7,8-HxCDF	--	ND(0.0000000064)	ND(0.0000000044)	ND(0.0000000018)	ND(0.0000000023)
HxCDFs (total)	--	ND(0.0000000064)	ND(0.0000000051)	ND(0.0000000023)	ND(0.0000000023)
1,2,3,4,6,7,8-HpCDF	--	ND(0.000000011)	ND(0.000000029)	ND(0.000000032)	ND(0.000000054)
1,2,3,4,7,8,9-HpCDF	--	ND(0.000000011)	ND(0.000000029)	ND(0.000000015)	ND(0.000000054)
HpCDFs (total)	--	ND(0.000000011)	ND(0.000000029)	ND(0.000000032)	ND(0.000000054)
OCDF	--	ND(0.000000011)	ND(0.000000017)	ND(0.0000000076)	ND(0.000000067)
Total Furans	--	ND(0.000000011)	ND(0.000000029)	ND(0.000000032)	ND(0.000000067)
Dioxins					
2,3,7,8-TCDD	--	ND(0.00000000090)	ND(0.0000000035)	ND(0.0000000035)	ND(0.0000000030)
TCDDs (total)	--	ND(0.00000000090)	ND(0.0000000035)	ND(0.0000000035)	ND(0.0000000030)
1,2,3,7,8-PeCDD	--	ND(0.0000000071)	ND(0.000000034)	ND(0.0000000071)	ND(0.000000031)
PeCDDs (total)	--	ND(0.0000000071)	ND(0.000000034)	ND(0.0000000071)	ND(0.000000031)
1,2,3,4,7,8-HxCDD	--	ND(0.0000000069)	ND(0.000000014)	ND(0.0000000056)	ND(0.000000032)
1,2,3,6,7,8-HxCDD	--	ND(0.0000000086)	ND(0.000000017)	ND(0.0000000070)	ND(0.000000040)
1,2,3,7,8,9-HxCDD	--	ND(0.0000000077)	ND(0.000000015)	ND(0.0000000062)	ND(0.000000036)
HxCDDs (total)	--	ND(0.0000000086)	ND(0.000000017)	ND(0.0000000070)	ND(0.000000040)
1,2,3,4,6,7,8-HpCDD	--	ND(0.000000013)	ND(0.000000029)	ND(0.000000011)	ND(0.000000082)
HpCDDs (total)	--	ND(0.000000013)	ND(0.000000029)	ND(0.000000011)	ND(0.000000082)
OCDD	--	ND(0.000000017)	ND(0.000000020)	ND(0.0000000090)	ND(0.000000084)
Total Dioxins	--	ND(0.000000017)	ND(0.000000034)	ND(0.000000011)	ND(0.000000084)
Total TEQs (MDEP TEFs)	0.0001	ND(0.000000017)	ND(0.000000034)	ND(0.000000032)	ND(0.000000084)
Total TEQs (EPA TEFs)	3E-8 (MCL)	ND(0.000000017)	ND(0.000000034)	ND(0.000000032)	ND(0.000000084)
Inorganics					
Arsenic	0.4	ND(0.00600)	0.0320	ND(0.00600)	ND(0.00600)
Barium	30	0.0250	0.0830	0.0570	0.0200
Zinc	0.9	0.0290	0.0330	0.0830	ND(0.0260)

(See Notes on Page 5)

TABLE 3

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

SUMMARY OF APPENDIX IX+3 CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES
(Results are presented in dry-weight parts per million, ppm)

Sample ID Date Collected	MCP GW-3 Standard	OPCA-MW-1 06/16/99	OPCA-MW-2 06/15/99	OPCA-MW-3 06/16/99
Volatile Organics				
None Detected	--	--	--	--
Semivolatile Organics				
None Detected	--	--	--	--
PCBs				
Aroclor-1254	--	0.000054	ND(0.000050) [ND(0.000050)]	0.000040 J
Total PCBs	0.0003	0.000054	ND(0.000050) [ND(0.000050)]	0.000040
Furans				
2,3,7,8-TCDF	--	ND(0.0000000011)	ND(0.00000000080) [ND(0.00000000060)]	ND(0.0000000035)
TCDFs (total)	--	0.0000000090 J**	ND(0.00000000080) [ND(0.00000000060)]	ND(0.0000000035)
1,2,3,7,8-PeCDF	--	ND(0.0000000025)	ND(0.0000000038) [ND(0.0000000021)]	ND(0.0000000041)
2,3,4,7,8-PeCDF	--	ND(0.0000000024)	ND(0.0000000040) [ND(0.0000000023)]	ND(0.0000000039)
PeCDFs (total)	--	ND(0.0000000025)	ND(0.0000000040) [ND(0.0000000023)]	ND(0.0000000041)
1,2,3,4,7,8-HxCDF	--	ND(0.0000000011)	ND(0.000000011) [ND(0.0000000051)]	ND(0.0000000013)
1,2,3,6,7,8-HxCDF	--	ND(0.0000000011)	ND(0.000000011) [ND(0.0000000052)]	ND(0.0000000013)
1,2,3,7,8,9-HxCDF	--	ND(0.0000000016)	ND(0.000000017) [ND(0.0000000049)]	ND(0.0000000018)
2,3,4,6,7,8-HxCDF	--	ND(0.0000000012)	ND(0.000000011) [ND(0.0000000054)]	ND(0.0000000013)
HxCDFs (total)	--	ND(0.0000000016)	ND(0.000000017) [ND(0.0000000054)]	ND(0.0000000018)
1,2,3,4,6,7,8-HpCDF	--	ND(0.0000000073)	ND(0.000000048) [ND(0.000000011)]	ND(0.0000000080)
1,2,3,4,7,8,9-HpCDF	--	ND(0.0000000090)	ND(0.000000031) [ND(0.000000013)]	ND(0.0000000099)
HpCDFs (total)	--	0.0000000078 J**	ND(0.000000048) [0.000000013 J**]	ND(0.0000000099)
OCDF	--	ND(0.0000000037)	ND(0.000000022) [ND(0.000000010)]	ND(0.0000000041)
Total Furans	--	0.000000017	ND(0.000000048) [0.000000013]	ND(0.0000000099)
Dioxins				
2,3,7,8-TCDD	--	ND(0.0000000012)	ND(0.0000000015) [ND(0.0000000011)]	ND(0.0000000020)
TCDDs (total)	--	ND(0.0000000012)	ND(0.0000000015) [ND(0.0000000011)]	ND(0.0000000020)
1,2,3,7,8-PeCDD	--	ND(0.0000000046)	ND(0.000000015) [ND(0.0000000076)]	ND(0.0000000089)
PeCDDs (total)	--	ND(0.0000000046)	ND(0.000000015) [ND(0.0000000076)]	ND(0.0000000089)
1,2,3,4,7,8-HxCDD	--	ND(0.0000000034)	ND(0.000000014) [ND(0.0000000068)]	ND(0.0000000058)
1,2,3,6,7,8-HxCDD	--	ND(0.0000000042)	ND(0.000000017) [ND(0.0000000085)]	ND(0.0000000072)
1,2,3,7,8,9-HxCDD	--	ND(0.0000000038)	ND(0.000000015) [ND(0.0000000076)]	ND(0.0000000064)
HxCDDs (total)	--	ND(0.0000000042)	ND(0.000000017) [ND(0.0000000085)]	ND(0.0000000072)
1,2,3,4,6,7,8-HpCDD	--	ND(0.0000000070)	ND(0.000000036) [ND(0.000000013)]	ND(0.0000000077)
HpCDDs (total)	--	ND(0.0000000070)	ND(0.000000036) [ND(0.000000013)]	ND(0.0000000077)
OCDD	--	ND(0.0000000044)	ND(0.000000033) [ND(0.000000015)]	ND(0.0000000048)
Total Dioxins	--	ND(0.0000000070)	ND(0.000000036) [ND(0.000000015)]	ND(0.0000000089)
Total TEQs (MDEP TEFs)	0.0001	0.00000000017	ND(0.000000048) [0.00000000013]	ND(0.0000000099)
Total TEQs (EPA TEFs)	3E-8 (MCL)	ND(0.000000017)	ND(0.000000048) [ND(0.000000015)]	ND(0.0000000099)
Inorganics				
Arsenic	0.4	ND(0.00600)	ND(0.00600) [ND(0.00600)]	ND(0.00600)
Barium	30	0.0620	0.0320 [0.0340]	0.00950
Zinc	0.9	ND(0.0260)	ND(0.0260) [ND(0.0260)]	0.0880

(See Notes on Page 5)

TABLE 3

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

SUMMARY OF APPENDIX IX+3 CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES
(Results are presented in dry-weight parts per million, ppm)

Sample ID Date Collected	MCP GW-3 Standard	OPCA-MW-4 06/15/99	OPCA-MW-5 06/15/99	OPCA-MW-6 06/15/99	OPCA-MW-7 06/15/99
Volatile Organics					
None Detected	--	--	--	--	--
Semivolatile Organics					
None Detected	--	--	--	--	--
PCBs					
Aroclor-1254	--	0.00089	ND(0.000051)	0.00012	ND(0.000051)
Total PCBs	0.0003	0.00089	ND(0.000051)	0.00012	ND(0.000051)
Furans					
2,3,7,8-TCDF	--	ND(0.00000000070)	ND(0.00000000080)	ND(0.00000000090)	ND(0.00000000080)
TCDFs (total)	--	ND(0.00000000070)	ND(0.00000000080)	ND(0.00000000090)	ND(0.00000000080)
1,2,3,7,8-PeCDF	--	ND(0.0000000043)	ND(0.0000000028)	ND(0.0000000033)	ND(0.0000000030)
2,3,4,7,8-PeCDF	--	ND(0.0000000040)	ND(0.0000000027)	ND(0.0000000031)	ND(0.0000000028)
PeCDFs (total)	--	ND(0.0000000043)	ND(0.0000000028)	ND(0.0000000033)	ND(0.0000000030)
1,2,3,4,7,8-HxCDF	--	ND(0.0000000090)	ND(0.0000000050)	ND(0.0000000089)	ND(0.0000000069)
1,2,3,6,7,8-HxCDF	--	ND(0.0000000092)	ND(0.0000000051)	ND(0.0000000092)	ND(0.0000000070)
1,2,3,7,8,9-HxCDF	--	ND(0.0000000087)	ND(0.0000000049)	ND(0.0000000087)	ND(0.0000000067)
2,3,4,6,7,8-HxCDF	--	ND(0.0000000095)	ND(0.0000000053)	ND(0.0000000096)	ND(0.0000000073)
HxCDFs (total)	--	ND(0.0000000095)	ND(0.0000000053)	ND(0.0000000095)	ND(0.0000000073)
1,2,3,4,6,7,8-HpCDF	--	ND(0.000000020)	ND(0.0000000088)	ND(0.000000020)	ND(0.000000013)
1,2,3,4,7,8,9-HpCDF	--	ND(0.000000020)	ND(0.0000000088)	ND(0.000000020)	ND(0.000000013)
HpCDFs (total)	--	ND(0.000000020)	ND(0.0000000088)	ND(0.000000020)	ND(0.000000013)
OCDF	--	ND(0.000000020)	ND(0.0000000078)	ND(0.000000020)	ND(0.000000012)
Total Furans	--	ND(0.000000020)	ND(0.0000000088)	ND(0.000000020)	ND(0.000000013)
Dioxins					
2,3,7,8-TCDD	--	ND(0.0000000013)	ND(0.0000000012)	ND(0.0000000012)	ND(0.0000000013)
TCDDs (total)	--	ND(0.0000000013)	ND(0.0000000012)	ND(0.0000000012)	ND(0.0000000013)
1,2,3,7,8-PeCDD	--	ND(0.000000018)	ND(0.000000014)	ND(0.000000012)	ND(0.000000010)
PeCDDs (total)	--	ND(0.000000018)	ND(0.000000014)	ND(0.000000012)	ND(0.000000010)
1,2,3,4,7,8-HxCDD	--	ND(0.000000013)	ND(0.0000000062)	ND(0.000000012)	ND(0.0000000097)
1,2,3,6,7,8-HxCDD	--	ND(0.000000016)	ND(0.0000000077)	ND(0.000000015)	ND(0.000000012)
1,2,3,7,8,9-HxCDD	--	ND(0.000000014)	ND(0.0000000068)	ND(0.000000013)	ND(0.000000011)
HxCDDs (total)	--	ND(0.000000016)	ND(0.0000000077)	ND(0.000000015)	ND(0.000000012)
1,2,3,4,6,7,8-HpCDD	--	ND(0.000000027)	ND(0.000000012)	ND(0.000000026)	ND(0.000000017)
HpCDDs (total)	--	ND(0.000000027)	ND(0.000000012)	ND(0.000000026)	ND(0.000000017)
OCDD	--	ND(0.000000030)	ND(0.000000012)	ND(0.000000029)	ND(0.000000018)
Total Dioxins	--	ND(0.000000030)	ND(0.000000014)	ND(0.000000029)	ND(0.000000018)
Total TEQs (MDEP TEFs)	0.0001	ND(0.000000030)	ND(0.000000014)	ND(0.000000029)	ND(0.000000018)
Total TEQs (EPA TEFs)	3E-8 (MCL)	ND(0.000000030)	ND(0.000000014)	ND(0.000000029)	ND(0.000000018)
Inorganics					
Arsenic	0.4	ND(0.00600)	ND(0.00600)	ND(0.00600)	ND(0.00600)
Barium	30	0.0370	0.0290	0.0300	0.0270
Zinc	0.9	ND(0.0260)	ND(0.0260)	ND(0.0260)	ND(0.0260)

(See Notes on Page 5)

TABLE 3

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

SUMMARY OF APPENDIX IX+3 CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES
(Results are presented in dry-weight parts per million, ppm)

Sample ID / Date Collected	MCP GW-3 Standard	OPCA-MW-8 06/14/99
Volatile Organics		
None Detected	--	--
Semivolatile Organics		
None Detected	--	--
PCBs		
Aroclor-1254	--	ND(0.00010)
Total PCBs	0.0003	ND(0.00010)
Furans		
2,3,7,8-TCDF	--	ND(0.00000000070)
TCDFs (total)	--	ND(0.00000000070)
1,2,3,7,8-PeCDF	--	ND(0.0000000029)
2,3,4,7,8-PeCDF	--	ND(0.0000000027)
PeCDFs (total)	--	ND(0.0000000029)
1,2,3,4,7,8-HxCDF	--	ND(0.0000000097)
1,2,3,6,7,8-HxCDF	--	ND(0.0000000099)
1,2,3,7,8,9-HxCDF	--	ND(0.0000000094)
2,3,4,6,7,8-HxCDF	--	ND(0.000000010)
HxCDFs (total)	--	ND(0.000000010)
1,2,3,4,6,7,8-HpCDF	--	ND(0.000000022)
1,2,3,4,7,8,9-HpCDF	--	ND(0.000000022)
HpCDFs (total)	--	ND(0.000000022)
OCDF	--	ND(0.000000025)
Total Furans	--	ND(0.000000025)
Dioxins		
2,3,7,8-TCDD	--	ND(0.0000000011)
TCDDs (total)	--	ND(0.0000000011)
1,2,3,7,8-PeCDD	--	ND(0.000000011)
PeCDDs (total)	--	ND(0.000000011)
1,2,3,4,7,8-HxCDD	--	ND(0.000000013)
1,2,3,6,7,8-HxCDD	--	ND(0.000000016)
1,2,3,7,8,9-HxCDD	--	ND(0.000000014)
HxCDDs (total)	--	ND(0.000000016)
1,2,3,4,6,7,8-HpCDD	--	ND(0.000000030)
HpCDDs (total)	--	ND(0.000000030)
OCDD	--	ND(0.000000037)
Total Dioxins	--	ND(0.000000037)
Total TEQs (MDEP TEFs)	0.0001	ND(0.000000037)
Total TEQs (EPA TEFs)	3E-8 (MCL)	ND(0.000000037)
Inorganics		
Arsenic	0.4	ND(0.00600)
Barium	30	0.0860
Zinc	0.9	ND(0.0260)

(See Notes on Page 5)
93191543.xls

8/12/99

TABLE 3 PRELIMINARY ANALYTICAL RESULTS
SUBJECT TO VERIFICATION

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

SUMMARY OF APPENDIX IX+3 CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES - JUNE 1999

Notes:

1) Samples were collected by Blasland, Bouck & Lee, Inc., and were submitted to CT&E Environmental Services, Inc. for analysis of Appendix IX+3 constituents (excluding herbicides and pesticides).
2) Only constituents detected in one or more samples are shown.
3) ND - Analyte was not detected. The number in parentheses is the associated detection limit.
4) J - Indicates an estimated value less than the CLP-required quantitation limit.
5) J** - Indicates an estimated value between the lower calibration limit and the target detection limit.
6) Total dioxins/furans determined as the sum of the total homolog concentrations; non-detect values considered as zero.
7) Total 2,3,7,8-TCDD toxicity equivalents (TEQs) were calculated using both MDEP's and EPA's Toxicity Equivalency Factors (TEFs) for all PCDD/PCDF congeners, although GE does not accept the validity of these TEFs.
8) Duplicate results are presented in brackets.

(See Notes on Page 5)

TABLE 4

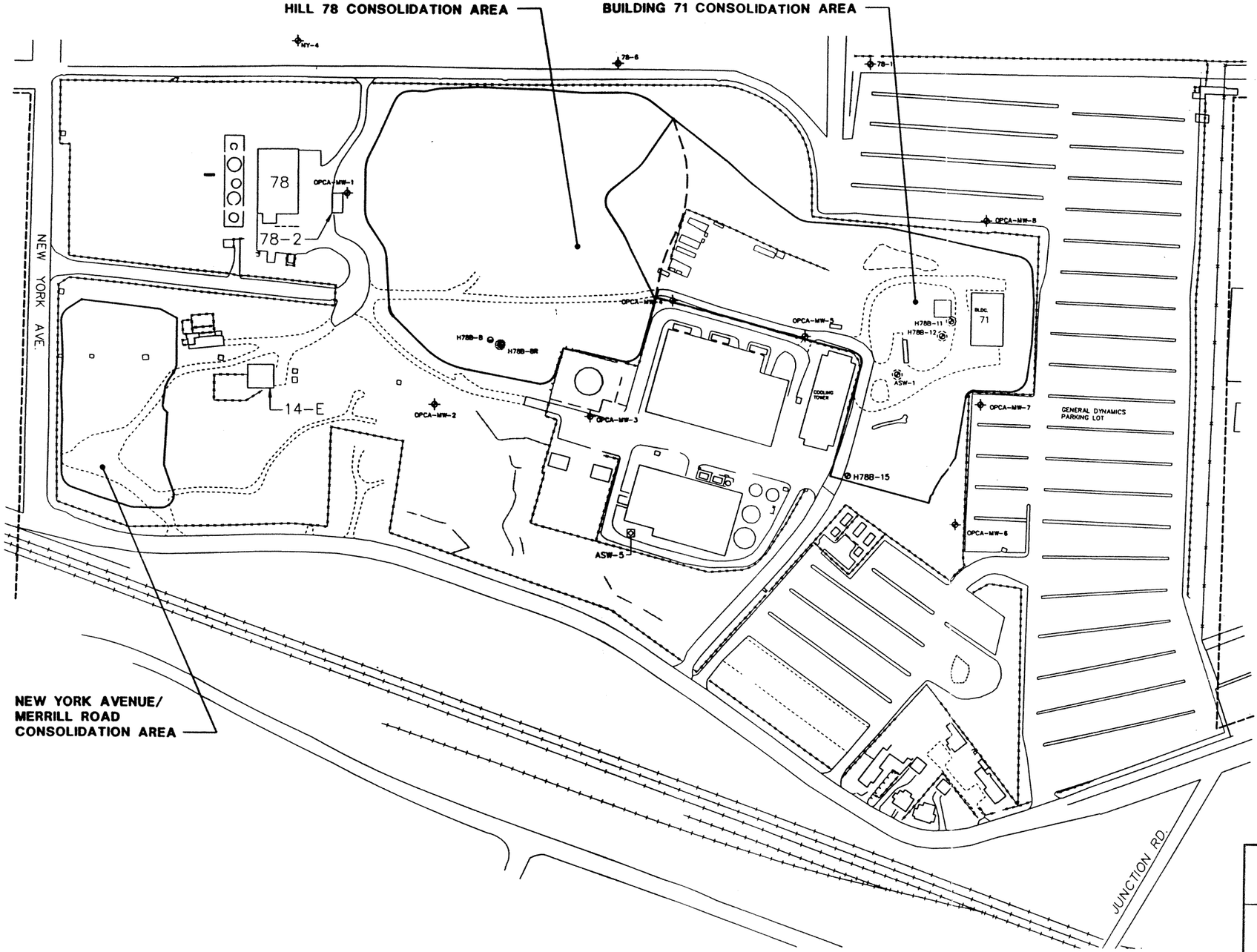
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
ADDENDUM TO DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

LNAPL RECOVERY TEST RESULTS

DATE	TIME	ELAPSED TIME (hours)	DEPTH TO WATER	DEPTH TO LNAPL	LNAPL THICKNESS	LNAPL VOLUME REMOVED (liters)		RECOVERY RATE (gallons per minute)
						INTERVAL	CUMULATIVE	
07/19/99	09:00 AM	0	29.75	29.69	0.06	0.04	0.04	---
07/19/99	10:00 AM	1	29.72	29.7	0.02	0.02	0.06	0.000088
07/19/99	11:00 AM	2	29.71	29.7	0.01	0.01	0.07	0.000044
07/19/99	12:00 PM	3	29.72	---	0	---	0.07	---
07/19/99	01:00 PM	4	29.7	---	0	---	0.07	---
07/19/99	02:00 PM	5	29.67	---	0	---	0.07	---
07/19/99	04:00 PM	7	29.69	---	0	---	0.07	---
07/20/99	09:00 AM	24	29.7	---	0	---	0.07	---
07/20/99	10:00 AM	25	29.7	---	0	---	0.07	---
07/20/99	12:00 PM	27	29.71	---	0	---	0.07	---
07/20/99	02:00 PM	29	29.71	---	0	---	0.07	---
07/20/99	04:00 PM	31	29.71	---	0	---	0.07	---
07/21/99	09:00 AM	48	29.78	29.77	0.01	---	0.07	---
07/21/99	11:00 AM	50	29.78	29.77	0.01	---	0.07	---
07/21/99	01:00 PM	52	29.77	29.76	0.01	---	0.07	---
07/21/99	03:00 PM	54	29.78	29.76	0.02	0.02	0.09	0.000002
07/21/99	04:00 PM	55	29.77	---	0	---	0.09	---

Average Recovery Rate for Test: 0.000004 gallons per minute

Figures



LEGEND:

- APPROXIMATE AREA OF PROPOSED CONSOLIDATION AREAS
- EXISTING SECURITY FENCE
- 78-6 WELL PROPOSED AS PART OF CONSOLIDATION AREA MONITORING PROGRAM
- ASW-5 DEEP WATER SUPPLY WELL MONITORED BY U.S. GENERATING COMPANY
- H78B-12 EXISTING MONITORING WELL TO BE ABANDONED PRIOR TO 1999 CONSOLIDATION ACTIVITIES
- H78B-8R MONITORING WELL INCLUDED IN LNAPL MONITORING PROGRAM
- MEASURABLE LNAPL IN WELL

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. -FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND, BOUCK & LEE, INC. (BBL) CONSTRUCTION PLANS; AND ON OBSERVATIONS DURING A SITE VISIT BY BBL PERSONNEL ON DECEMBER 3, 1997.
2. SITE BOUNDARIES ARE APPROXIMATE.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. THE LOCATIONS OF WELLS H78B-8 AND H78B-8R WERE SLIGHTLY MODIFIED IN ORDER TO MORE CLEARLY DELINEATE THE EXTENT OF MEASURABLE LNAPL AT THE SCALE OF THIS DRAWING.
5. WELLS OPCA-MW-2 AND OPCA-MW-3 ARE ALSO INCLUDED IN THE LNAPL MONITORING PROGRAM.

100' 0 100' 200'
GRAPHIC SCALE

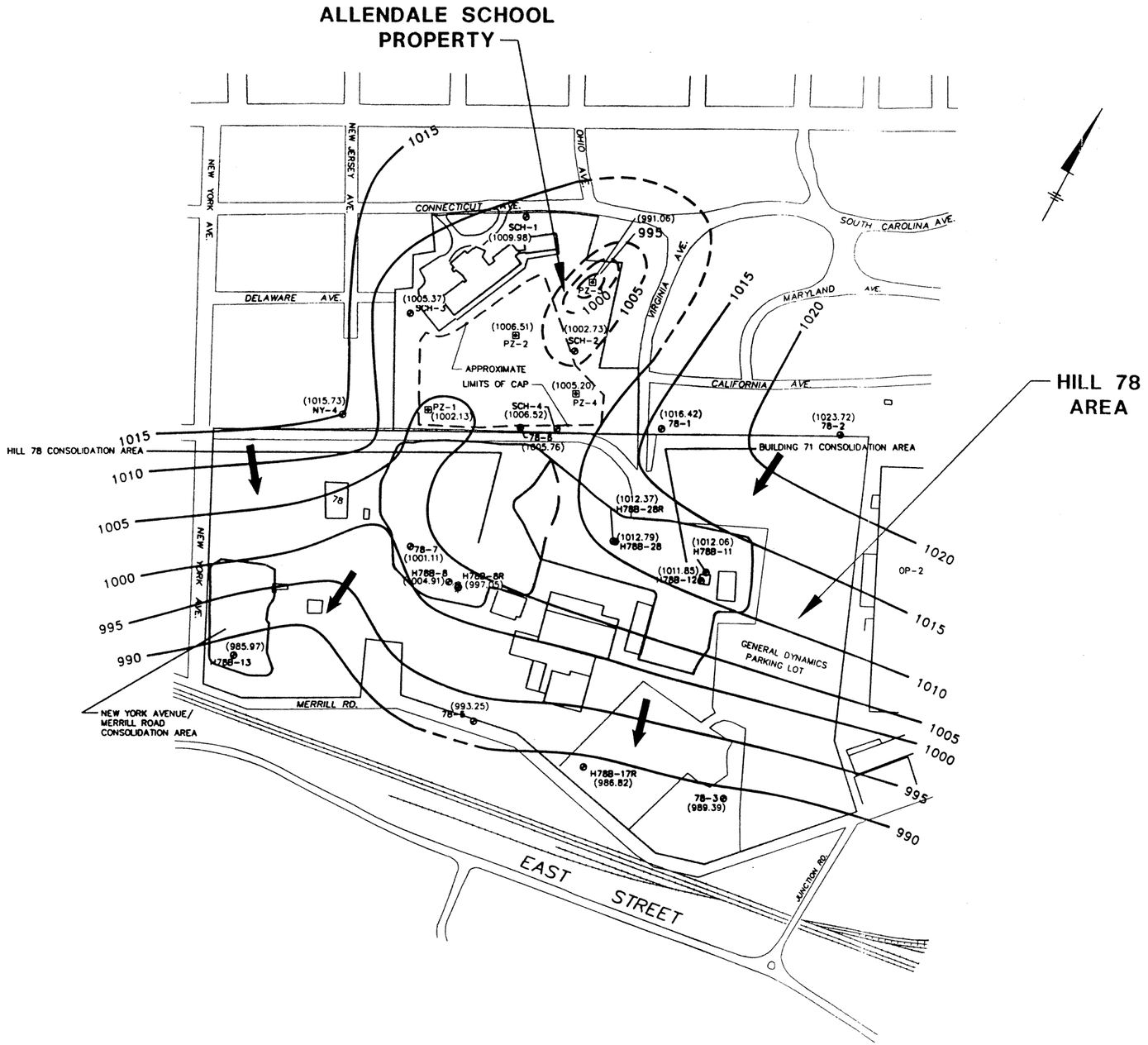
X: 20185X01.DWG
L: ON=*; OFF=*REF*
P: STD-PCP/DL.PCP
7/30/99 SYR-54--GMS CBM GMS
20185003/REPORT/20185B09.DWG

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR
ON-PLANT CONSOLIDATION AREAS

GROUNDWATER MONITORING PROGRAM

BBL BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 1



LEGEND

- EXISTING PIEZOMETER LOCATION
- EXISTING MONITORING WELL LOCATION
- MEASURABLE LNAPL IN WELL
- 1000 — GROUNDWATER ELEVATION CONTOUR LINE IN FEET (5 FT INTERVAL), DASHED WHERE INFERRED
- (1002.13) 5/25/99 GROUNDWATER ELEVATION (IN FEET)
- GROUNDWATER FLOW DIRECTION
- CONSOLIDATION AREAS

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. – FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND & BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARIES/LIMITS ARE APPROXIMATE.
4. GROUNDWATER CONTOURS ARE BASED ON GROUNDWATER ELEVATION DATA COLLECTED BY BLASLAND, BOUCK & LEE, INC. ON MAY 25, 1999.
5. THE LOCATIONS OF WELLS H78B-8 AND H78B-8R WERE SLIGHTLY MODIFIED IN ORDER TO MORE CLEARLY DELINEATE THE EXTENT OF MEASURABLE LNAPL AT THE SCALE OF THIS DRAWING.

0 200' 400'
GRAPHIC SCALE

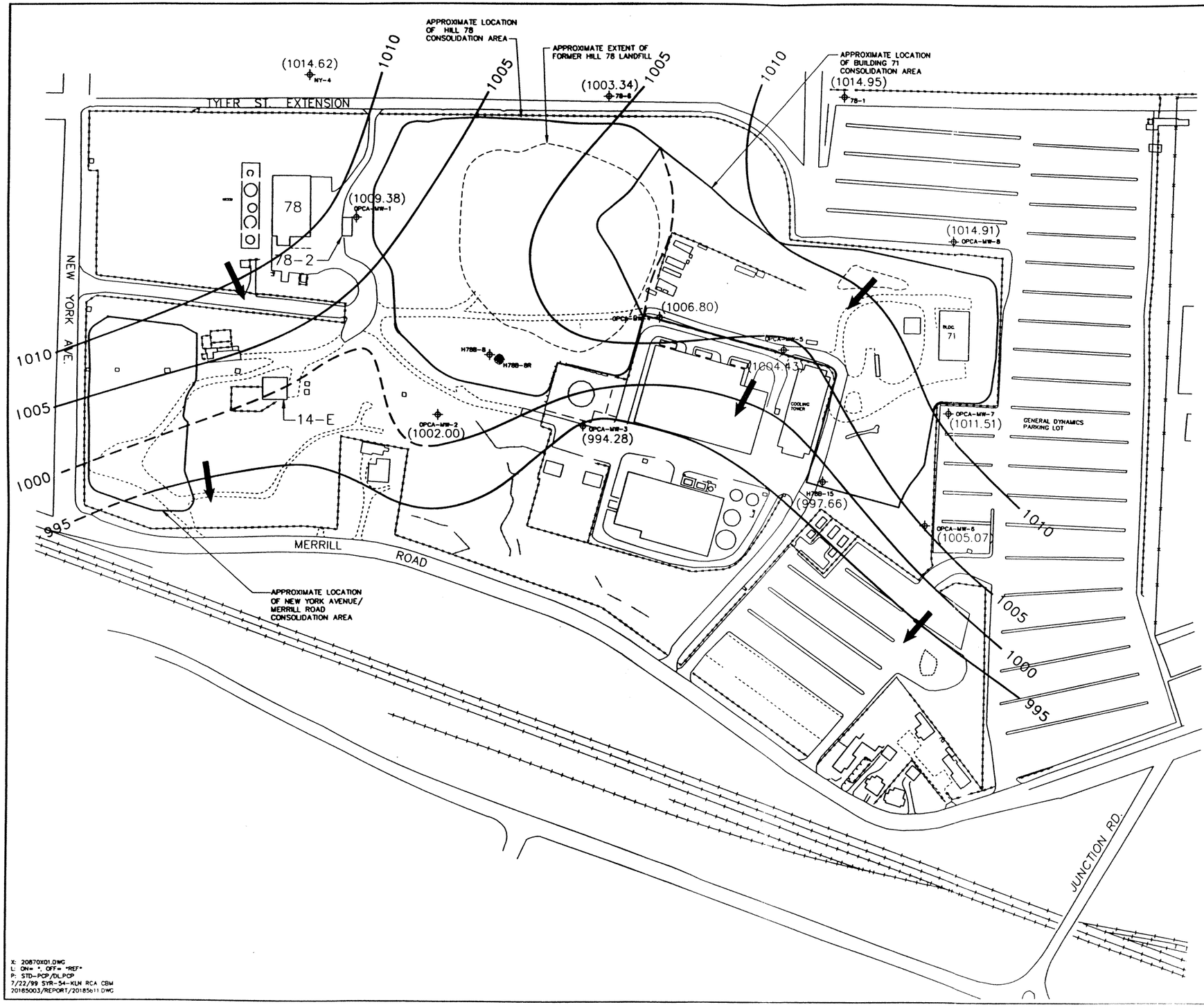
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

GROUNDWATER ELEVATION CONTOURS - MAY 25, 1999

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

X: (NONE)
L: ON= *, OFF= *REF*
P: STD-PCP/TK
8/4/99 STR-54--GWS CBM KLM
20185003/REPORT/20185B10.DWG



LEGEND:

- FENCE
- EXISTING MONITORING WELL LOCATION
- MEASURABLE LNAPL IN WELL
- 1000 — GROUNDWATER ELEVATION CONTOUR LINE IN FEET (5 FT INTERVAL), DASHED WHERE INFERRED
- (997.66) 6/17/99 GROUNDWATER ELEVATION (IN FEET)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. - FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. SITE BOUNDARIES ARE APPROXIMATE.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. GROUND WATER CONTOURS ARE BASED ON GROUND WATER ELEVATION DATA COLLECTED BY BLASLAND, BOUCK & LEE, INC. ON JUNE 17, 1999.
5. THE LOCATIONS OF WELLS H788-8 AND H788-8R WERE SLIGHTLY MODIFIED IN ORDER TO MORE CLEARLY DELINEATE THE EXTENT OF MEASURABLE LNAPL AT THE SCALE OF THIS DRAWING.

100' 0 100' 200'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR ON-PLANT CONSOLIDATION AREAS

GROUND WATER ELEVATION CONTOURS - JUNE 17, 1999

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3

X: 20870X01.DWG
L: ON= *, OFF= *REF*
P: STD-PCP/DL.PCP
7/22/99 SYR-54-KLN RCA CBM
20185003/REPORT/20185b11.DWG

Appendix A

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Monitoring Well Boring Logs and Installation Records

Date Start/Finish: 5-28-99 / 5-28-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" **Auger Size :** 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535457.84790
Easting: 135580.12538
Well Casing Elev.: ft.
Corehole Depth: ft.
Borehole Depth: 30.1 ft.
Ground Surface Elev.: ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-1

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH ft / ELEVATION ft	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation ft										Locking stick up steel protective casing installed to 2.8' above ground surface.
									GROUND SURFACE	
	(0-2')		4 5 4 4	9	1.4	0.1			Dark brown fine SAND and SILT, trace organics, moist. (Topsoil)	Concrete pad: 0.0' to 0.5' bgs.
									Brown fine to coarse SAND, and fine to medium GRAVEL, moist.	
	(2-4')		5 6 10 12	16	1.3	0.0			Brown fine SAND and SILT, wet.	
5	(4-6')		20 14 15 12	29	0.2	0.2			Brown fine SAND and SILT, little to some fine to medium Gravel, moist.	5% Bentonite cement grout: 0.5' to 15.11' bgs.
	(6-8')		11 11 9 11	20	0.8	0.1			Olive-brown fine to coarse SAND and SILT, loose, wet.	
	(8-10')		8 9 9 12	18	1.3	0.1			Olive-brown SILT, trace fine to coarse Sand and fine Gravel, dense, moist.	
10	(10-12')		8 8 10 12	18	1.6	0.0			Same as above with trace Clay, moist.	2-in diameter Sch. 40 PVC riser: 2.5'ags to 20.1' bgs.
	(12-14')		9 14 15 17	29	1.7	0.0				
15	(14-16')		5 9	21	1.0	0.0			Olive-brown SILT, trace Clay and fine Gravel, dense, moist.	

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BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-4-99 / 12:00		9.45 ▼
6-17-99		10.27 ▼
		▼

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-1

Total Depth = 30.1 ft.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	(14-16')		12 13	21	1.0	0.0			Olive-brown SILT, trace Clay and fine Gravel, dense, trace fine Sand in stringers, wet.	Bentonite seal: 15.1' to 18.1' bgs.
	(16-18')		11 18 28 29	46	1.3	0.0				
	(18-20')		8 14 13 16	27	1.6	0.0				Grade #00N Sand Pack: 18.1' to 30.1' bgs.
20	(20-22')		2 11 29 33	40	1.8	0.0				
	(22-24')		25 16 22 21	38	2.0	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine Gravel, loose, saturated.	
									Olive-brown SILT, trace fine to coarse Sand and fine Gravel, dense, moist. Trace fine Sand stringers, wet.	
25	(24-26')		16 21 31 30	52	1.7	0.1				2-in diameter Sch. 40 PVC 0.010" slot screen: 20.1' to 30.1' bgs.
	(26-28')		17 31 41 39	72	1.6	0.2			Olive-brown SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, loose, saturated.	
	(28-30')		10 18 19 20	37	1.8	0.0			Olive-brown SILT, some fine Sand, trace medium to coarse Sand and fine to medium Gravel, dense, wet.	
30									Olive-brown SILT, trace fine to coarse Sand, Clay, and fine Gravel, dense, moist.	
									Boring terminated at 30.1' bgs.	
35										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:

Water Levels

Date / Time	Elevation	Depth
6-4-99 / 12:00		9.45 ▼
6-17-99		10.27 ▼
		▼

Date Start/Finish: 5-28-99 / 6-1-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" Auger Size: 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535180.56712
Easting: 135917.71542
Well Casing Elev.: ft.
Corehole Depth: ft.
Borehole Depth: 23.5 ft.
Ground Surface Elev.: ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-2

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation ft										Locking stick up steel protective casing installed to 2.7' above ground surface.
									GROUND SURFACE	
	(0-2')		3 3 5 7	8	1.7	0.0			Dark brown fine SAND and SILT, trace organics, moist. (Topsoil)	Concrete pad: 0.0'to 0.5' bgs.
									Dark Brown fine to medium SAND, some Silt, trace coarse Sand, moist.	
	(2-4')		11 16 19 17	35	2.0	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, dense, moist.	
5	(4-6')		6 8 5 4	13	1.5	0.1			Olive-brown fine Sand, some medium Sand, loose, moist.	5% Bentonite cement grout: 0.5' to 9.0' bgs.
	(6-8')		3 2 3 3	5	0.7	0.1				2-in diameter Sch. 40 PVC riser: 2.4' ags to 13' bgs.
	(8-10')		3 2 2 3	4	1.2	0.0			Olive-brown fine SAND, some Silt, trace medium to coarse Sand and fine Gravel, loose moist.	
10	(10-12')		2 2 2 1	4	2.0	0.0			Brown fine SAND and SILT, wet.	Bentonite seal: 9.0' to 11.0' bgs.
									Brown fine SAND little to some Silt, loose, saturated.	
	(12-14')		4 3 5 7	8	1.9	0.3			Gray fine SAND and SILT, trace black organic staining, medium-dense, wet.	
15	(14-16')		16 14	28	1.5	0.2			Rusty brown fine to coarse SAND, some Silt, trace fine Gravel, wet.	

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 9:35		17.42 ↧
6-17-99		17.58 ↧
		∇

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-2

Total Depth = 23.5 ft.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	(14-16')		14 19	28	1.5	0.2			Rusty brown fine to coarse SAND, some Silt and fine to medium Gravel, loose, moist.	
	(16-18')		6 5 9 19	14	1.8	0.0			Olive-brown fine SAND, some Silt, trace medium to coarse Sand and fine to medium Gravel, medium-dense, saturated.	Grade #00N Sand Pack: 11.0' to 23.5' bgs.
	(18-20')		50/	NA	0.3	0.0				
20	(20-22')		8 9 10 16	19	1.9	0.0				2-in diameter Sch. 40 PVC, 0.010" slot screen: 13.0' to 23.0' bgs.
	(22-24')		NA NA NA NA	NA	NA	NA			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine Gravel, dense, wet.	
25									Boring terminated at 23.5' bgs.	
30										
35										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 9:35		17.42 ▼
6-17-99		17.58 ▼
		▼

Project: 20185

Script: BBL-well
Date: 07/10/99

Date Start/Finish: 6-2-99 / 6-2-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" Auger Size : 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535300.34271
Easting: 136189.15795
Well Casing Elev.: 1014.87 ft.
Corehole Depth: ft.
Borehole Depth: 28.0 ft.
Ground Surface Elev.: 1015.3 ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-3

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 1015.3 ft.										GROUND SURFACE	8" X 12" Flush mount steel curb box
	1015	(0-2')		NA 11 18 16	29	0.5	0.0			Asphalt Pavement Olive-brown SAND, some Silt and fine to medium gravel, loose, moist.	Concrete pad: 0.0 to 2.0' bgs.
		(2-4')		36 34 29 20	63	1.7	0.0				Sand drain: 2.0' to 3.0' bgs.
5	1010	(4-6')		6 8 7 8	15	1.1	0.0			Olive-brown fine SAND, some Silt, trace medium to coarse Sand, fine to medium Gravel, and slag, loose, moist.	5% Bentonite cement grout: 3.0' to 13.6' bgs.
		(6-8')		75/ 0.2 NA NA	NA	0.2	0.0			Cobble Zone at 6.2-8.0' bgs	
10	1005	(8-10')		4 3 4 4	7	1.8	0.0			Olive-brown fine SAND, little Silt, trace medium to coarse Sand and fine to medium Gravel, loose, moist.	2-in diameter Sch. 40 PVC riser: 0.3' to 18' bgs.
		(10-12')		4 3 4 3	7	1.5	0.0				
		(12-14')		4 4 4 4	8	1.7	0.0			Light olive-brown fine SAND, trace Silt, medium to coarse Sand, and fine Gravel, moist.	
15		(14-18')		3 4	9	1.3	0.0				Bentonite seal: 13.6' to 15.9' bgs.

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 11:40		20.37 ▽
6-17-99		20.97 ▽
		▽

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-3

Total Depth = 28.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	1000	(14-16')		5 5	9	1.3	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand, fine to medium Gravel, and Clay, moist.	
		(16-18')		3 3 5 6	8	1.5	0.0			Dark brown SILT, some fine Sand, trace organics, interbedded with fine Sand (layers approximately 0.02' thick), moist.	
		(18-20')		7 9 8 7	17	2.0	0.0			Olive -rusty brown fine SAND, trace Silt and medium to coarse Sand, medium-dense, moist.	Grade #00N Sand Pack: 15.9' to 28' bgs.
20	995	(20-22')		5 4 3 6	7	2.0	0.0			Olive-brown fine to coarse SAND, trace Silt, trace iron staining, wet.	
		(22-24')		7 9 13 11	22	2.0	0.0			Olive-brown and rusty brown interbedded fine SAND and SILT, laminated, wet.	
25	990	(24-26')		5 5 6 5	11	1.5	NA			Olive-brown fine to medium SAND, trace Silt, saturated.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 18.0' to 28.0' bgs.
		(26-28')		6 8 8 9	16	1.0	0.0			Olive-brown interbedded fine SAND and SILT, laminated, saturated.	
30	985									Boring terminated at 28.0' bgs.	
35											

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 1t40		20.37 ▼
6-17-99		20.97 ▼
		▽

Date Start/Finish: 6-1-99 / 6-1-99 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Lansing **Drilling Method:** Hollow Stem Auger **Bit Size:** 4.25" **Auger Size:** 4.25" **Rig Type:** CME-55 **Spoon Size:** 2-in.	**Northing:** 535570.22488 **Easting:** 136222.54800 **Well Casing Elev.:** 1018.71 ft. **Corehole Depth:** ft. **Borehole Depth:** 22.0 ft. **Ground Surface Elev.:** 1019.2 ft. **Geologist:** Leanne Sanders	**Well No.** OPCA-MW-4 **Client:** General Electric Company **Site:** Hill 78/ Building 71 Consolidation Area Pittsfield, Massachusetts

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
@ elevation 1082 ft.										**GROUND SURFACE**	8" diameter Stainless steel flush mount box.
		(0-2')		5 5 6 8	11	0.5	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, medium-dense, moist.	Concrete pad: 0.0' to 0.8' bgs.
		(2-4')		6 6 7 9	13	1.8	0.1				Sand drain: 0.8' to 2.0' bgs.
	1015										
5		(4-6')		4 2 1 2	3	1.2	0.0				5% Bentonite cement grout: 2.0' to 8.0' bgs.
		(6-8')		2 2 4 8	6	0.5	0.1			Color change to dark gray-black from 7.1' to 7.2' bgs.	2-in diameter Sch. 40 PVC riser: 0.0' to 12' bgs.
	1010	(8-10')		9 6 4 4	10	1.5	0.0			Olive-brown fine Sand, trace Silt, medium to coarse Sand, and fine to medium Gravel, loose, moist.	Bentonite seal: 8.0' to 10.0' bgs.
10		(10-12')		3 3 20 8	23	1.0	0.0			Olive-brown fine SAND, some Silt, trace medium to coarse Sand and fine to medium Gravel, wet. Saturated at 12' bgs.	Grade #00N Sand Pack: 10.0' to 22.0' bgs.
		(12-14')		6 6 7 7	13	1.3	0.0			Olive-brown fine SAND, little Silt, trace medium to coarse Sand, wet.	
	1005										
15		(14-16')		3 3	7	1.2	0.0				

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Remarks:
NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-8-99 / 8:45		11.55 ▼
6-17-99		12.42 ▼
		▽

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Well No. OPCA-MW-4

Total Depth = 22.0 ft.

Client:
General Electric Company

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
		(14-16')		4 3	7	1.2	0.0			Dark olive-brown fine SAND and SILT, trace medium to coarse Sand, fine Gravel, and Clay, pliable, wet.	Grade #00N Sand Pack: 10.0' to 22.0' bgs.
		(16-18')		2 3 7 10	10	1.4	0.0				
	1000	(18-20')		4 2 8 8	10	1.8	8.0			Dark olive-brown to gray fine SAND and SILT, trace medium to coarse Sand, loose, saturated.	2-in diameter Sch. 40 PVC 0.010", slot screen: 12.0' to 22.0' bgs.
20		(20-22')		6 7 7 8	14	1.3	10.0				
										Boring terminated at 22.0' bgs.	
	995										
25											
	990										
30											
	985										
35											

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Remarks:

Water Levels

Date / Time	Elevation	Depth
6-8-99 / 8:45		11.55 ▼
6-17-99		12.42 ▼
		▽

Date Start/Finish: 6-3-99 / 6-3-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" **Auger Size:** 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535830.67759
Easting: 136477.97793
Well Casing Elev.: 1017.07 ft.
Corehole Depth: ft.
Borehole Depth: 20.0 ft.
Ground Surface Elev.: 1017.8 ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-5

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 1017.8 ft.										**GROUND SURFACE**	10 X 10 X 12" Stainless steal flush mount curb box.
		(0-2')		13 17 24 40	42	1.2	NA			Olive-brown fine SAND, some medium to coarse, Sand, little fine to medium Gravel, moist.	Concrete pad: 0.0'to 1.0' bgs.
	1015	(2-4')		26 24 25 20	49	0.8	0.0			Dark gray fine to coarse SAND, some fine to medium gravel, trace asphalt, brick and slag, moist (Fill).	5% Bentonite cement grout: 1.0' to 6.0' bgs.
5		(4-6')		15 21 14 14	35	0.7	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, dense, moist.	2-in diameter Sch. 40 PVC riser: 0.3' to 9.8' bgs.
	1010	(6-8')		9 11 15 13	26	2.0	0.0			Olive-brown to dark brown fine SAND and SILT, trace medium to coarse Sand, mottled, dense, moist.	Bentonite seal: 6.0' to 8.0' bgs.
		(8-10')		6 7 7 8	14	1.1	0.0			Olive-brown fine SAND, moist.	
10		(10-12')		5 6 6 7	12	2.0	0.0			Dark brown fine SAND and SILT. trace medium to coarse Sand and Organics, moist.	Grade #00N Sand Pack: 8.0' to 20.0' bgs.
	1005	(12-14')		8 9 11 13	20	1.8	0.0			Olive-rusty brown fine to medium SAND, coarsening downward, moist, wet at 11.5'bgs.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 9.8' to 19.8' bgs.
15		(14-16')		5 6	13	0.2	NA			Olive brown fine to medium SAND, trace Silt and medium Gravel, saturated.	
										Olive-brown SILT, little fine to medium Gravel,	

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Water Levels

Date / Time	Elevation	Depth
6-8-99 / 10:40		10.18 ▼
6-17-99		13.20 ▼
		▽

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-5

Total Depth = 20.0 ft.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	(14-16')		7 7	13	0.2	NA			trace fine to coarse Sand, dense, wet.	Grade #00N Sand Pack: 8.0' to 20.0' bgs.
1000	(16-18')		6 6 6 11	12	1.8	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, medium-dense, saturated.	
20	(18-20')		3 1 2 2	3	0.1	0.0			Olive-brown fine to medium SAND and SILT, little Clay, soft, saturated.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 9.8' to 19.8' bgs.
									Boring terminated at 20.0' bgs.	
995										
25										
990										
30										
985										
35										

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Remarks:

Water Levels

Date / Time	Elevation	Depth
6-8-99 / 10:40		10.18 ▼
6-17-99		13.20 ▼
		▽

Date Start/Finish: 6-8-99 / 6-8-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" Auger Size: 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535449.43636
Easting: 136901.92354
Well Casing Elev.: 1022.10 ft.
Corehole Depth: ft.
Borehole Depth: 25.0 ft.
Ground Surface Elev.: 1022.7 ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-6

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 1022.7 ft.											
										GROUND SURFACE	8" diameter steel flushmount curb box
		(0-2')		6 7 8 8	15	1.5	0.0			Orange brown fine SAND and SILT, some medium to coarse Sand, trace fine to medium Gravel, loose, moist.	Concrete pad: 0.0' to 0.5' bgs.
	1020	(2-4')		6 5 5 4	10	1.0	0.1			Brown fine SAND, little medium to coarse Sand, loose, moist.	
5		(4-6')		5 4 4 4	8	1.3	0.0			Orange-brown fine SAND, loose, moist.	5% Bentonite cement grout: 0.5' to 10.0' bgs.
	1015	(6-8')		7 5 4 5	9	1.6	0.0			Light orange-brown medium SAND, little fine and coarse Sand, loose, moist.	
		(8-10')		2 3 3 4	6	1.7	0.0			Brown medium SAND, some fine Sand, little coarse Sand, trace fine to medium Gravel, loose, moist.	2-in diameter Sch. 40 PVC riser: 0.5' to 15.0' bgs.
10		(10-12')		4 3 3 3	6	0.3	0.0			Olive-brown fine SAND, some Silt, moist to wet.	Bentonite seal: 10.0' to 13.0' bgs.
	1010	(12-14')		35 50/ 0.1 NA	NA	1.5	0.0			Olive-brown fine SAND and fine to medium GRAVEL, some cobbles, moist.	
15		(14-18')		1 1	3	1.7	0.0			Olive-brown SILT, some fine Sand, trace Gravel, wet.	

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Water Levels

Date / Time	Elevation	Depth
6-10-99 / 9:28		16.98 ▼
6-17-99		17.62 ▼
		▽

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-6

Total Depth = 25.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
		(14-16')		2 1	3	1.7	0.0			Brown fine to medium SAND, wet.	
		(16-18')		3 11 14 18	25	1.3	0.0			Olive-brown fine SAND and SILT, trace to little medium to coarse Sand, Silt, and fine to medium Gravel, pliable, wet.	Grade #00N Sand Pack: 13.0' to 25.0' bgs.
	1005										
20		(18-20')		3 12 11 10	23	1.6	0.0			Olive-brown fine SAND, trace medium to coarse Sand, Silt, and fine to medium Gravel saturated.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 15.0' to 25.0' bgs.
		(20-22')		4 6 13 14	19	1.5	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, pliable, saturated.	
	1000									Light brown fine SAND, trace to little medium to coarse Sand, Silt, and fine Gravel, saturated.	
		(22-24')		23 19 26 26	45	1.5	0.0			Light brown fine SAND, trace medium Sand, saturated, layered with olive-brown fine SAND and SILT, saturated, layers approximately 0.4' thick.	
25		(24-25)		NA NA	NA	NA	NA				
										Boring terminated at 25' bgs.	
	995										
30											
	990										
35											

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Remarks:

Water Levels

Date / Time	Elevation	Depth
6-10-99 / 9:28		16.98 ▼
6-17-99		17.62 ▼
		▽

Project: 20185
Script: BBL-well
Date: 07/10/99

Date Start/Finish: 5-26-99 / 5-26-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" **Auger Size :** 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535673.73391
Easting: 136835.85600
Well Casing Elev.: 1026.40 ft.
Corehole Depth: ft.
Borehole Depth: 24.0 ft.
Ground Surface Elev.: 1026.9 ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-7

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 1026.9 ft.										8" X 12" Flush mount steel curb box
									GROUND SURFACE	
1025	(0-2')		21 9 6 5	15	1.2	0.0			Asphalt Pavement Brown fine SAND, trace Silt, loose, moist.	Concrete pad: 0.0 to 2.0' bgs.
	(2-4')		6 7 8 5	15	1.9	0.0			Same as above with trace fine to medium Gravel. Light to medium brown fine SAND, trace medium to coarse Sand and fine Gravel, loose, moist.	5% Bentonite cement grout: 2.0' to 10.0' bgs.
5	(4-6')		5 5 4 5	9	1.6	0.0				
1020	(6-8')		5 6 9 19	15	1.7	0.0			Light to medium brown fine SAND, moist.	2-in diameter Sch. 40 PVC riser: 0.3' to 14' bgs.
	(8-10')		7 17 22 27	39	1.9	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, moist.	
10	(10-12')		10 15 17 23	32	1.8	0.1				Bentonite seal: 10.0' to 11.8' bgs.
1015	(12-14')		13 17 50/ 0.3	67	0.6	0.0				Grade #00N Sand Pack: 11.8' to 24.0' bgs.
15	(14-16')		6 8	19	1.7	0.0			Wet at 13.9' bgs.	

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Remarks:
NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 13:50		14.52
6-17-99		15.42

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Well No. OPCA-MW-7

Total Depth = 24.0 ft.

Client:
General Electric Company

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
		(14-16')		11 20	19	1.7	0.0			Light olive-brown fine SAND and SILT, wet.	Grade #00N Sand Pack: 11.8' to 24.0' bgs.
	1010	(16-18')		13 10 31 30	41	2.0	0.0			Light olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, dense, wet to moist.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 14.0' to 24.0' bgs.
20		(18-20')		28 24 23 29	47	1.8	0.0				
	1005	(20-22')		18 32 39 59	71	1.0	0.0				
		(22-24')		86/ 0.5 NA NA	NA	0.3	0.0			Boring terminated at 24.0' bgs.	
25	1000										
30	995										
35											

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Remarks:

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 13:50		14.52 ▼
6-17-99		15.42 ▼
		▽

Date Start/Finish: 5-27-99 / 5-27-99
Drilling Company: Parratt Wolff, Inc.
Driller's Name: J. Lansing
Drilling Method: Hollow Stem Auger
Bit Size: 4.25" Auger Size.: 4.25"
Rig Type: CME-55
Spoon Size: 2-in.

Northing: 535989.21494
Easting: 136679.67704
Well Casing Elev.: 1027.57 ft.
Corehole Depth: ft.
Borehole Depth: 23.7 ft.
Ground Surface Elev.: 1027.9 ft.

Geologist: Leanne Sanders

Well No. OPCA-MW-8

Client:
General Electric Company

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
@ elevation 1027.9 ft.											
										GROUND SURFACE	8" X 12" Flush mount steel curb box
		(0-2')		8 7 9 9	16	1.2	0.0			Asphalt Pavement Olive-brown fine SAND and SILT, trace medium to coarse Sand and fine to medium Gravel, dense, moist.	Concrete pad: 0.0 to 0.7' bgs.
	1025	(2-4')		59 29 22 22	51	1.3	0.0				Sand Drain: 0.7' to 2.0' bgs.
5		(4-6')		18 29 54 40	83	1.2	0.0			Olive-brown SILT, little fine Sand, trace medium to coarse Sand, dense, moist. Little fine to medium Gravel, 5.0' to 5.4' bgs.	5% Bentonite cement grout: 2.0' to 9.5' bgs.
		(6-8')		44 59 NA NA	103	0.7	0.0			Cobble Zone at 7.0-8.0' bgs	2-in diameter Sch. 40 PVC riser: 0.3' to 13.5'bgs.
	1020	(8-10')		18 32 36 44	68	1.0	0.0			Olive-brown fine SAND and SILT, trace-little fine to medium Gravel, trace medium to coarse Sand, dense, moist.	
10		(10-12')		13 32 58 49	90	1.6	0.0				Bentonite seal: 9.5' to 11.5' bgs.
										Wet at 12.0' bgs.	
	1015	(12-14')		54 NA NA NA	NA	0.5	0.0				Grade #00N Sand Pack: 11.5' to 23.7' bgs.
15		(14-16')		15 33	69	1.7	0.0				

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NA = Not Available. bgs = Below Ground Surface. ags = Above Ground Surface.

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 15:20		11.71 ▼
6-17-99		12.97 ▼
		▽

Site:
Hill 78/ Building 71 Consolidation Area
Pittsfield, Massachusetts

Client:
General Electric Company

Well No. OPCA-MW-8

Total Depth = 23.7 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
		(14-16')		36 41	69	1.7	0.0			Olive-brown fine SAND and SILT, trace-little fine to medium Gravel, trace medium to coarse Sand, dense, moist.	Grade #00N Sand Pack: 11.5' to 23.7' bgs.
		(16-18')		55/ 0.3 NA NA	NA	0.3	NA				
	1010										
		(18-20')		19 29 27 33	56	1.8	0.0			Olive-brown SILT, some fine Sand, trace medium to coarse Sand and fine to medium Gravel, pliable, wet to saturated.	2-in diameter Sch. 40 PVC, 0.010" slot screen: 13.5' to 23.5' bgs.
20										Olive-brown SILT, some fine Sand, trace medium to coarse Sand, pliable, saturated.	
		(20-22')		16 24 34 29	58	1.7	0.0				
	1005										
		(22-24')		34 29 42 50	71	0.9	0.0			Olive-brown fine SAND and SILT, trace medium to coarse Sand, dense, wet.	
										Boring terminated at 23.7' bgs.	
25											
	1000										
30											
	995										
35											

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Remarks:

Water Levels

Date / Time	Elevation	Depth
6-7-99 / 15:20		11.71 ▼
6-17-99		12.97 ▼
		▽

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Environmental Services

SAMPLE/CORE LOG

Well 78-1 Project/No. AY05502 Page 1 of 1

Hill 78 Area, Pittsfield, MA Drilling Started 1-2-90 Drilling Completed 1-2-90

Depth Drilled 23 feet Hole Diameter 6.65 inches Type of Sample/ Coring Device Split-spoon

Sand Diameter (2' X 2") Sampling Interval 2 feet

Surface Elev. 1027.4 feet ☒ Surveyed ☐ Estimated Datum USGS 1929

Fluid Used None Drilling Method Hollow-stem Auger

For Clean Berkshires, Inc. Driller Ed Helper George Ron

Ed A. LaBarge Hammer Weight 140# Hammer Drop 30 inches

Core Depth (and surface) To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	SAMPLE ID	Sample/Core Description
2	1.0	11-10-12-12	PH01B0002	SAND (75%) brown, medium to coarse; Gravel (15%); fine to medium, poorly sorted.
4	0.2	8-8-5-4	PH01B0204	SAND (50%) brown, medium; Gravel (50%) fine, well-sorted.
6	1.2	2-9-5-4	PH01B0406	SAND (85%) light-brown, fine, moist; Gravel (10%) fine, well-sorted; Abrupt change to black organic peat material with roots at base of spoon, ~ 5.8'.
8	0.7	2-1-2-5	PH01B0608	SAND (95%) light-brown, fine, moist;Gravel (5%) very fine.
10	1.6	5-5-4-5	PH01B0810	SAND (95%) brown-grey, fine, moist; Gravel (5%) fine.
12	1.8	8-10-7-12	PH01B1012	SAND (95%) light-brown to red-brown, moist, fine, includes roots and reeds; Gravel (5%) fine.
14	1.9	6-7-10-11	PH01B1214	SAND (90%) light-brown to grey, fine, moist; Gravel (10%) fine to medium, rounded to subangular.
16	1.8	7-9-10-8	PH01B1416	Same as above, wet.
18	1.9	15-20-13-15	PH01B1618	Same as above, wet.
20	2.0	18-41-36-40	PH01B1820	Same as above, wet.
22	0.8	25-31-100/2	PH01B2022	SAND (85%) red-brown, medium to coarse; Rock fragments (15%); refusal at ~ 22 feet
23				No recovery, pushing boulder; Augured to 23 feet
				TD = 23 feet.
				DTW = 9.5 feet.

GERAGHTY & MILLER, INC.
Environmental Services

SAMPLE/CORE LOG

Boring/Well 78-6 Project/No. AY05502 Page 1 of 1

Site Location Hill 78 Area, Pittsfield, MA Drilling Started 1-3-91 Drilling Completed 1-3-91

Total Depth Drilled 18 feet Hole Diameter: 6.65 inches Type of Sample/ Coring Device Split-spoon

Length and Diameter of Coring Device (2' x 2") Sampling Interval 2 feet

Ground-Surface Elev. ~~1013.1~~ feet ☒ Surveyed ☐ Estimated Datum ~~USGS 1929~~

Drilling Fluid Used None Drilling Method Hollow-stem Auger

Drilling Contractor Clean Berkshires, Inc. Driller Ed Helper George Ron

Prepared By A. LaBarge Hammer Weight 140# Hammer Drop 30 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	SAMPLE ID	Sample/Core Description
0	2	0.5	4-6-5-5	PH06B002	SAND (80%) brown, fine, dry; Grass, roots (15%) top humus layer; Gravel (5%) very fine, rounded.
2	4	0.2	4-3-2-7	PH06B0204	SAND (90%) light brown to brown, fine to medium, dry; Gravel (10%) fine, subangular.
4	6	0.8	7-8-5-6	PH06B0406	Same as above.
6	8	1.3	6-10-6-7	PH06B0608	SAND (95%) light brown to reddish brown, fine, moist; Gravel (5%) fine; subrounded. Trace of plastic material.
8	10	1.5	2-1-3-5	PH06B0310	SAND (95%) brown to light grey, fine, wet; Gravel (5%) fine to medium, subrounded.
10	12	1.9	11-11-6-5	PH06B1012	SAND (95%) light-grey, fine, wet; Gravel (5%) fine, rounded.
12	14	1.8	3-7-13-16	PH06B1214	SAND (50%) light-grey, fine, wet; Abrupt change to black peat (30%), natural organic material at 13 feet, with roots; SAND (20%) grey, fine, dry at base, tight.
14	16	1.6	5-6-10-16	PH06B1416	SAND (95%) light-grey to brown, fine, moist; Trace silt, grey.
16	18	2.0	21-20-23-20	PH06B1618	SAND (85%) light-grey, fine at top, coarsening and yellow-brown at base; Gravel (15%) fine at top, coarse at base, wet. Bottom of boring TD = 18 feet DTW = 7.5

[illegible] & MILLER, INC.

SAMPLE CORE LOG

BORING: B-15 PROJECT NO: MY05505 PAGE: 1 of 1

SITE LOCATION: GE - Allresco Pittsfield, MA

DRILLING STARTED: 10/31/89 DRILLING COMPLETED: 10/31/89

TOTAL DEPTH DRILLED: 8 ft HOLE DIAMETER: 6 in. TYPE OF SAMPLE/ CORING DEVICE: Split Spoon Core

LENGTH & DIAMETER OF CORING DEVICE: 2 ft x 2 in. SAMPLING INTERVAL: 2 ft

LAND-SURFACE ELEVATION: ( ) SURVEYED ( ) ESTIMATED DATUM:

DRILLING FLUID USED: None DRILLING METHOD: Hollow-Stem Auger

DRILLING CONTRACTOR: Soil and Material Testing DRILLER: Gilley HELPER: Weasel

PREPARED BY: W. Gray HAMMER WEIGHT: 140 lb. HAMMER DROP: 30 inches

SAMPLE DEPTH (FT BELOW LAND SURFACE) FROM	TO	CORE RECVRY (FT)	BLOW COUNTS PER 6 INCHES	SAMPLE/CORE DESCRIPTION
0	2	1.4	6-6-4-3	1-1/2 in. Asphalt. Fill, sand and gravel, brown.
2	4	1.3	4-4-7-8	Sand and gravel, brown (natural sediments).
4	6	1.6	7-8-8-9	Same.
6	8	1.5	8-8-7-7	Same.

SAMPLE/CORE LOG

WELL: NY-4 PROJECT NO: New York Ave. NY360NY01 PAGE: 1 of 1

SITE LOCATION: General Electric Pittsfield, MA DRILLING STARTED: 5/2/88 DRILLING COMPLETED: 5/2/88

TOTAL DEPTH DRILLED: 33 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Split Spoon

LENGTH & DIAMETER OF CORING DEVICE: 2 ft x 2 in. SAMPLING INTERVAL: continuous

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: None DRILLING METHOD: Hollow Stem Auger

DRILLING CONTRACTOR: Soil & Mat'l. Testing DRILLER: Tom HELPER: Bob

PREPARED BY: J. Duminuco HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
	0	2	1.0	1-2-	Sand, fine to medium, trace gravel, silt, vegetation,
				2-2	brown.
	2	4	1.1	3-3-	Sand, fine to coarse, some gravel, trace silt,
				3-4	brown-gray.
	4	6	1.2	6-9-	Interlayered: sand, fine to coarse, some gravel,
				6-7	trace silt; sand, fine, silty; silt, sandy; brown.
	6	8	1.4	9-18-	Sand, fine to medium, silty and gravel, brown (damp).
				16-18	
	8	10	1.4	15-15-	Silt, sandy, trace gravel, brown; (wet).
				19-14	
	10	12	0.0	20-25-	No recovery - pushing cobbles - augered to 14.0 ft.
				40-120	
	14	16	1.0	11-9-	(Interlayered) Sand, fine, silty and silt, sandy,
				12-17	brown; (damp).
	16	18	0.9	16-20-	Silt, some fine sand, trace gravel, brown.
				22-27	
	18	20	0.8	29-50-	Sand, fine, some silt, trace gravel, brown; (damp).
				45-45	
	20	22	1.8	70-75-	Do
				50-70	
	22	24	1.1	11-16-	Sand, fine, trace silt, brown; (damp).
				32-37	

Appendix B

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Field Sampling Data

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-1
Key No. Ex-37
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SLL SDR
Date 6/16/99 **Time In / Out** 0750
Weather Partly cloudy 60°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade		
Well Diameter	2"	
Well Depth	32.40'	
Screen Interval Depth	20.1 - 30.1	
Water Table Depth	10.48'	
Intake Depth of Pump/Tubing	25'	

Pump Start Time 0805
Pump Stop Time ~~[illegible]~~ 0910
Sample Time ~~[illegible]~~ 0830
Sample ID OPCA-MW-1
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI

- (X) VOCs / HCL, 2-40ml VOAs
- (X) SVOCs /1 L Amber
- (X) Dioxin / 1L Amber
- (X) Metals (Total) / HNO3, 500ml Plastic
- (X) Cyanide / NaOH, 500ml Plastic
- (X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
- (X) PCBs (Total) / 1L Amber

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	21.92
Volume of Water in Well	3.57 Gallon
Minutes of Pumping	65 min

EVACUATION INFORMATION

Volume of water removed from well 5 Gallons
Evacuation Method: Bailer ( ) Pump (X)
Did well go dry? Y N
Pump Type: Grundfos
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
0806	.400		11.41'		10.40	7.62	0.430	59.6	9.66	129.3
0809	.400		13.[illegible]'		10.30	7.64	0.428	45.5	9.02	129.6
0812	.400		14.57'		10.50	7.53	0.426	89.6	8.88	127.4
0815	.400		[illegible].22'		11.47	7.47	0.425	153.2	8.66	123.3
0818	.400		1[illegible].12'		11.[illegible]	7.44	0.426	3[illegible]4.4	8.63	118.6
0821	.400		—		11.[illegible]	7.40	0.427	[illegible].2	8.57	117.5
0824	[illegible]		[illegible]		[illegible]2.27	7.36	[illegible].426	24.8	8.52	118.5
0827	.400		19.22		[illegible]2.67	7.33	0.426	16.6	8.44	118.5
Final	.400		[illegible]		[illegible]	7.[illegible]	0.42[illegible]	[illegible]	[illegible]	1[illegible]

MISCELLANEOUS OBSERVATIONS/PROBLEMS * DO seems to be high.
* MS/MSD taken here

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator: [signature]

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-2
Key No. FK-37
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SLL, SDE
Date 6/9/99 Time In / Out 1630
Weather Partly cloudy 70°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade		
Well Diameter	2"	
Well Depth	25.10'	
Screen Interval Depth	13-25	
Water Table Depth	17.62'	
Intake Depth of Pump/Tubing	20'	

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	7.48
Volume of Water in Well	1.22 gallons.
Minutes of Pumping	65 mins.

Pump Start Time 1440
Pump Stop Time 1545
Sample Time 1515
Sample ID OPCA-MW-2
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HE
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspa
(X) PCBs (Total) / 1L Amber

EVACUATION INFORMATION

Volume of water removed from well 6 gallons
Evacuation Method: Bailer ( ) Pump (X)
Did well go dry? Y N
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1443	0.400		18.32'		9.77	7.09	0.911	267.8	5.34	139.5
1446	0.400		18.67'		10.45	6.84	0.913	657.7	4.05	135.8
1449	0.400		18.674'		10.51	6.76	0.919	302.8	3.32	132.7
1452	0.400		18.87'		11.56	6.78	0.925	229.4	3.00	131.4
1455	0.400		19.03		11.71	6.76	0.928	124.1	2.64	129.1
1458	0.400		19.16		11.69	6.74	0.930	63.1	2.47	129.8
1501	0.400		19.24		11.71	6.74	0.938	59.5	2.41	131.4
1504	0.400		19.49		12.02	6.75	0.942	53.6	2.38	127.2
1507	0.400		19.63		11.91	6.73	0.955	53.1	2.35	130.6
1510	0.400		19.72		12.40	6.74	0.956	54.7	2.37	129.0
1513	0.400		19.88		12.51	6.75	0.960	46.7	2.41	127.1
~~Final~~	0.400		19.88		12.51	6.75	0.960	46.7	2.41	127.1

MISCELLANEOUS OBSERVATIONS/PROBLEMS
* Dup-1 TAKEN HERE.

SAMPLE DESTINATION
Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-3
Key No:
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SL SJR
Date 6/16/99 Time In / Out 1200
Weather Partly cloudy 60°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	x	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	26.75'	
Screen Interval Depth	18'-26.75'	
Water Table Depth	20.71'	
Intake Depth of Pump/Tubing	24'	

Redevelop? Y (N)

Pump Start Time 1017
Pump Stop Time 1100
Sample Time 1050
Sample ID OPCA-MW-3
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac

(X) PCBs (Total) / 1L Amber

WELL WATER INFORMATION

Length of Water Column	6.04'
Volume of Water in Well	.98 Gallons
Minutes of Pumping	43

EVACUATION INFORMATION

Volume of water removed from well 7 Gallons
Did well go dry? Y N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: G/Rum FC)
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1018	.400		21.21'		11.80	7.49	0.626	724.6	2.56	152.0
1021	.400		21.24'		12.26	6.95	0.632	1273.7	1.38	108.5
1024	.400		21.46'		13.42	6.74	0.676	643.2	1.03	91.5
1027	.400		21.65'		12.52	6.70	0.654	318.9	0.78	93.0
1030	.400		21.75'		12.74	6.68	0.654	2800	0.67	87.3
1033	.400		21.78'		12.87	6.67	0.717	2704	0.65	96.5
1036	.350		21.71		13.27	6.65	0.741	537	0.66	88.5
1039	.350		21.75		13.40	6.65	0.741	619.6	0.64	90.0
1042	.350		21.77		13.16	6.66	0.723	73.2	0.62	90.3
1045	.350		21.79		13.16	6.66	0.731	54.8	0.60	91.0
1049	.350		21.79		13.29	6.66	0.735	46.6	0.61	91.5
Final	.350		21.78		13.29	6.66	0.735	46.6	0.61	91.5

MISCELLANEOUS OBSERVATIONS/PROBLEMS Changed D.O. membrane

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-4
Key No.:
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SLL, SAR
Date 6/15/99 Time In / Out 1320
Weather Partly cloudy ~70°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	21.25'	
Screen Interval Depth	12 - 21.25'	
Water Table Depth	12.01	
Intake Depth of Pump/Tubing	17'	

Pump Start Time 1336
Pump Stop Time 1410
Sample Time 1400
Sample ID OPCA - MW-4
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
(A) SVOCs /1 L Amber
(A) Dioxin / 1L Amber
(P) Metals (Total) / HNO3, 500ml Plastic
(A) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac

(X) PCBs (Total) / 1L Amber

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	9.24
Volume of Water in Well	1.51 Gallons
Minutes of Pumping	34 min.

EVACUATION INFORMATION

Volume of water removed from well 4 Gallons
Did well go dry? Y N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1337	.480		12.68'		11.85	7.37	0.871	77.2	6.09	132.5
1340	.400		13.01'		10.83	6.92	0.856	48.8	3.82	130.3
1343	.400		13.03'		11.71	6.87	0.865	57.8	2.86	129.2
1346	.400		13.14'		12.77	6.86	0.871	87.6	2.61	126.0
1349	.350		13.23'		13.48	6.87	0.871	171.0	2.40	120.4
1352	.350		13.37'		13.63	6.87	0.871	127	2.31	116.2
1355	.350		13.51		13.82	6.87	0.870	15.9	2.29	113.4
1358	.350		13.69		13.86	6.87	0.869	13.1	2.23	111.7
Final	.350		13.69		13.86	6.87	0.869	13.1	2.23	111.7

~LOWER 13.01'

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OCA-MW-5
Key No.: —
PID Background (ppm) 0.0
Well Headspace (ppm) 0.1

Site Name On-Site Consolidation Area
Sampling Personnel SLL, SPR
Date 6/24/99 Time In / Out 1050
Weather Sunny, 70°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	19.13'	
Screen Interval Depth	9.8 - 19	
Water Table Depth	10.80'	
Intake Depth of Pump/Tubing	15'	

Pump Start Time 1100
Pump Stop Time 1220
Sample Time 1210
Sample ID OCA-MW-5
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
( ) Dioxin / 1L Amber
(X) Metals (Total) / HNO3. 500ml Plastic
( ) Cyanide / NaOH. 500ml Plastic
(X) Sulfide / NaOH.ZnAc: 500ml glass - no headspac

( ) PCBs (Total) / 1L Amber

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	8.33
Volume of Water in Well	1.36 gallons
Minutes of Pumping	80 min.

EVACUATION INFORMATION

Volume of water removed from well 8 gallons
Did well go dry? Y N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: Columbus.
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1103	0.400		11.16'		10.99	7.59	0.655	158.6	2.19	-79.8
1106	0.400		11.21'		11.86	7.16	0.645	280.5	1.37	-80.0
1109	0.400		11.27'		12.17	7.04	0.635	607.9	1.15	-70.0
1112	0.400		11.39'		12.55	6.99	0.639	296.0	1.04	-66.2
1115	0.400		11.51'		12.89	6.97	0.647	178.8	1.04	-71.6
1118	0.400		11.61		13.62	6.95	0.645	184.6	1.20	-79.3
1121	0.400		11.81		13.74	6.94	0.649	187.5	1.15	-70.8
1124	0.400		12.07		13.42	6.90	0.640	232.8	1.90	-63.1
1127	0.400		12.17		14.02	6.89	0.641	279.5	2.21	-52.0
1130	0.400		12.56		13.47	6.89	0.637	242.9	2.42	-47.7
1133	0.300		12.84		13.35	6.96	0.632	187.4	2.49	-35.5
Rinse 1136	0.300		12.92		13.73	6.86	0.633	2666	2.42	-33.8

MISCELLANEOUS OBSERVATIONS/PROBLEMS * CHANGED DO MEMBRANE.

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-5
Key No.: —
PID Background (ppm) 0.0
Well Headspace (ppm) 0.1

Site Name On-Site Consolidation Area
Sampling Personnel SW, BPR
Date 6/15/99 Time In / Out 1050
Weather Sunny - 70°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	19.13'	
Screen Interval Depth	9.8-19'	
Water Table Depth	10.90'	
Intake Depth of Pump/Tubing	15'	

Redevelop? Y N

Pump Start Time 1100
Pump Stop Time 1220
Sample Time 1210
Sample ID OPCA-MW-5
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
( ) SVOCs /1 L Amber
( ) Dioxin / 1L Amber
( ) Metals (Total) / HNO3, 500ml Plastic
( ) Cyanide / NaOH, 500ml Plastic
( ) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
( ) PCBs (Total) / 1L Amber

WELL WATER INFORMATION

Length of Water Column	8.33
Volume of Water in Well	1.36 gallons
Minutes of Pumping	80 min

EVACUATION INFORMATION

Volume of water removed from well 8 gallons
Evacuation Method: Bailer ( ) Pump (X)
Did well go dry? Y N
Pump Type: Grundfos
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1139	0.250		13.05'		13.90	6.86	0.633	2836	2.04	-36.6
1142	0.250		13.13'		14.12	6.87	0.630	250.7	2.00	-34.7
1145	0.250		13.16'		14.57	6.87	0.628	222.3	2.06	-29.7
1148	0.100		13.17'		14.53	6.88	0.632	199.5	2.18	-25.5
1151	0.100		13.17'		14.60	6.88	0.632	184.2	2.39	-23.0
1154	0.100		13.18'		14.53	6.89	0.633	146.6	2.69	-19.2
1157	0.100		13.18'		14.68	6.90	0.635	100.4	2.97	-16.7
1200	0.100		13.18		14.70	6.90	0.636	82.2	3.20	-15.6
1203	0.100		13.18		14.75	6.91	0.636	60.0	3.45	-11.1
1206	0.100		13.18		14.84	6.91	0.636	44.6	3.65	-6.9
1209										
Final	0.100		13.18		14.84	6.91	0.636	44.6	3.65	-6.9

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-6
Key No.: —
PID Background (ppm) 0.0
Well Headspace (ppm) 0.1

Site Name On-Site Consolidation Area
Sampling Personnel SLL, SAR
Date 6/15/99 Time In / Out 0910
Weather Sunny ~65°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	A	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	23.80'	
Screen Interval Depth	5'- 23.80	
Water Table Depth	17.14	
Intake Depth of Pump/Tubing	20'	

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	6.66'
Volume of Water in Well	1.06 Gallons
Minutes of Pumping	45 minutes

Pump Start Time 0925
Pump Stop Time 1000
Sample Time 0955
Sample ID OPCA-MW-6
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
(X) PCBs (Total) / 1L Amber

EVACUATION INFORMATION

Volume of water removed from well 5 Gallons
Did well go dry? Y (N)
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
0926	.400		17.34		11.61	7.61	0.583	479.2	11.03	160.4
0929	0.400		17.86'		10.70	7.37	0.540	436.3	10.13	131.1
0932	0.400		17.91'		10.91	7.33	0.544	192.9	9.99	119.9
0935	0.400		18.02		11.44	7.32	0.537	161.9	9.85	108.4
0938	0.400		18.05		11.92	7.32	0.534	163.7	9.74	101.2
0941	0.400		18.05		12.31	7.32	0.534	176.0	9.67	100.1
0944	0.400		18.00		12.83	7.32	0.536	127.3	9.60	97.4
0947	0.300		18.00		13.18	7.32	0.534	71.6	9.58	94.7
0950	0.300		18.00		13.27	7.32	0.526	34.5	9.57	91.0
0953	0.300		18.00		13.31	7.32	0.522	28.6	9.56	90.2
Final										

MISCELLANEOUS OBSERVATIONS/PROBLEMS DO SEEMS TO BE TOO HIGH, will check DO probe AFTER sampling.

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-7
Key No. —
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SLL
Date 6/15/99 Time In / Out 0800
Weather sunny, 65°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	flush	
Well Diameter	2"	
Well Depth	23.43'	
Screen Interval Depth	14-23'	
Water Table Depth	15.02'	
Intake Depth of Pump/Tubing	19'	

Pump Start Time 0800
Pump Stop Time 0850
Sample Time 0845
Sample ID OPCA-MW-7
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(K) VOCs / HCL, 2-40ml VOAs
(K) SVOCs /1 L Amber
(K) Dioxin / 1L Amber
(K) Metals (Total) / HNO3, 500ml Plastic
(K) Cyanide / NaOH, 500ml Plastic
(K) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
(K) PCBs (Total) / 1L Amber

Redevelop? Y (N)

WELL WATER INFORMATION

Length of Water Column	8.41'
Volume of Water in Well	1.37 Gallons
Minutes of Pumping	50 min.

EVACUATION INFORMATION

Volume of water removed from well 5 Gallons
Did well go dry? Y (N)
Evacuation Method: Bailer ( ) Pump (K)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
0823	0.400		15.25'		13.09	7.97	1.363	28.6	8.27	166.9
0826	0.400		16.07'		11.31	7.17	1.310	20.3	6.92	168.3
0829	0.400		16.46		12.30	7.01	1.307	24.7	6.63	164.1
0832	0.400		16.73		13.28	6.97	1.305	17.1	6.53	161.4
0835	0.400		16.92		14.22	6.94	1.320	13.1	6.31	158.9
0838	0.400		17.24		14.64	6.93	1.333	9.2	6.18	155.6
0841	0.400		17.44		14.14	6.90	1.344	7.8	6.33	151.5
Final	0.400		17.44		14.14	6.90	1.344	7.8	6.33	151.5

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator: [signature]

GROUNDWATER SAMPLING FIELD LOG

Well No. OPCA-MW-8
Key No.:
PID Background (ppm) 0.0
Well Headspace (ppm) 0.2

Site Name On-Site Consolidation Area
Sampling Personnel SLL JDR
Date 6/14/99 Time In / Out 1530 / 1620
Weather cloudy, 80°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	23.04'	
Screen Interval Depth	13.5-23'	
Water Table Depth	12.66'	
Intake Depth of Pump/Tubing	20.'	

Pump Start Time 1540
Pump Stop Time 1610
Sample Time 1605
Sample ID OPCA-MW-8
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HE
(0) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
(X) PCBs (Total) / 1L Amber

Redevelop? Y N

WELL WATER INFORMATION

Length of Water Column	10.38
Volume of Water in Well	1.70 Gallons
Minutes of Pumping	30 min

EVACUATION INFORMATION

Volume of water removed from well 4 Gallons
Did well go dry? Y N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1540	0.400		13.25'		13.84	7.36	1.953	189.3	9.10	136.1
1543	0.400		13.86'		12.97	7.29	1.948	193.3	8.54	126.8
1546	0.400		14.17'		14.17	7.22	1.935	228.6	7.94	122.2
1549	0.400		14.42'		15.11	7.23	1.923	175.0	7.84	118.3
1552	0.400		14.79'		14.61	7.22	1.915	130.2	7.69	110.0
1555	0.400		14.99		15.17	7.22	1.949	136.9	7.52	105.6
1558	0.400		15.44		14.75	7.22	1.993	26.7	7.58	100.8
1601	0.400		15.84		14.93	7.22	2.003	22.2	7.47	98.9
Final	0.400		15.84		14.53	7.22	2.003	22.2	7.47	99.5

ENDED PUMP AT

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. 78-I
Key No.:
PID Background (ppm) 0.0
Well Headspace (ppm) 0.1

Site Name On-Site Consolidation Area
Sampling Personnel SK SDR
Date 6/14/99 Time In / Out 14:30
Weather Cloudy, 80F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	x	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	4"	
Well Depth	22.91'	
Screen Interval Depth	8'-23'	
Water Table Depth	11.39'	
Intake Depth of Pump/Tubing	15'	

Redevelop? Y N

Pump Start Time 1440
Pump Stop Time 1510
Sample Time 1505
Sample ID 78-1
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HE
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
(X) PCBs (Total) / 1L Amber

WELL WATER INFORMATION

Length of Water Column	11.52
Volume of Water in Well	7.6 gallons
Minutes of Pumping	30 min

EVACUATION INFORMATION

Volume of water removed from well 4 Gallons
Did well go dry? Y N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1445	0.350		11.61'		12.60	6.97	0.690	264.5	4.28	138.8
1448	0.350		11.78		12.78	6.74	0.680	167.2	3.28	137.1
1451	0.350		11.85		13.77	6.71	0.679	270.4	3.13	134.6
1454	0.350		12.03		13.78	6.70	0.682	218.1	3.05	132.6
1457	0.350		12.22		12.64	6.68	0.678	66.2	3.05	132.9
1500	0.350		12.43		12.95	6.67	0.670	35.4	3.00	133.8
1503	0.350		12.54		13.47	6.68	0.672	16.8	2.99	134.8
Final	0.350		12.54		13.47	6.68	0.672	16.8	2.99	134.8

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. 78-6
Key No:
PID Background (ppm) 0.0
Well Headspace (ppm) 0.3

Site Name On-Site Consolidation Area
Sampling Personnel RL, SPK
Date 6/14/99 Time In / Out 1430
Weather Sunny ~75°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	N	
Height of Ref. Pt. Relative to Grade	flush	
Well Diameter	4"	
Well Depth	9.31	
Screen Interval Depth	3'-15'	
Water Table Depth	9.05	
Intake Depth of Pump/Tubing	9.55'	

Pump Start Time 1645 | 1515
Pump Stop Time 1655 | 1545
Sample Time 1515
Sample ID 78-6
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
( ) VOCs / HCL, 2-40ml VOAs
( ) SVOCs /1 L Amber
( ) Dioxin / 1L Amber
( ) Metals (Total) / HNO3, 500ml Plastic
( ) Cyanide / NaOH, 500ml Plastic
( ) Sulfide / NaOH,ZnAc 500ml glass - no headspac
( ) PCBs (Total) / 1L Amber

Redevelop? Y N

WELL WATER INFORMATION

Length of Water Column	0.76
Volume of Water in Well	6.50 Gallons.
Minutes of Pumping	10

EVACUATION INFORMATION

Volume of water removed from well 1 Gallon
Did well go dry? (Y) N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: Peristaltic
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1648	.300	—	9.31'		15.46	6.80	2.211	118.5	1.17	-121.7
1651	.300	—	9.48'		14.67	6.65	2.175	60.3	0.98	-113.6
1654	.150		9.52'		16.75	6.70	2.209	101.4	2.73	-100.0
1655 Sampled										
1700										
Final										

MISCELLANEOUS OBSERVATIONS/PROBLEMS *WELL WENT DRY @ 1655, will let RECOVERY AND SAMPLE WELL.

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. H78B-15
Key No. FX-37
PID Background (ppm) 0.0
Well Headspace (ppm) 0.3

Site Name On-Site Consolidation Area
Sampling Personnel SL, SDR
Date 6/16/99 Time In / Out 1230
Weather Sunny ~70°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	a	
Height of Ref. Pt. Relative to Grade		
Well Diameter	3/4"	
Well Depth	17.98'	
Screen Interval Depth	6-16'	
Water Table Depth	15.14'	
Intake Depth of Pump/Tubing	17'	

Redevelop? Y (N)

Pump Start Time 1310 / 1330
Pump Stop Time 1322 / 1405
Sample Time ~~1315~~ 1345
Sample ID H78B-15
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
( ) VOCs / HCL, 2-40ml VOAs
( ) SVOCs /1 L Amber
( ) Dioxin / 1L Amber
( ) Metals (Total) / HNO3, 500ml Plastic
( ) Cyanide / NaOH. 500ml Plastic
( ) Sulfide / NaOH,ZnAc 500ml glass - no headspac
( ) PCBs (Total) / 1L Amber

WELL WATER INFORMATION

Length of Water Column	2.84'
Volume of Water in Well	
Minutes of Pumping	45 min

EVACUATION INFORMATION

Volume of water removed from well 3 Gallons
Did well go dry? (Y) N
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: Fl. 2" Pump
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1315	0.400		—	—	16.34	6.54	2.493	398.7	4.84	191.1
1318	0.400		—	—	16.61	6.72	2.515	363.2	4.97	183.1
1321	.350		—	—	13.71	6.51	2.343	116.3	5.88	190.5
~~1324~~	~~.250~~									
1333	.250				14.77	6.43	2.461	159.0	5.75	1930
1336	.250		—	—	13.70	6.39	2.451	58.6	5.47	199.2
1339	.250		—	—	13.72	6.37	2.447	21.6	5.37	203.4
1342	.250				13.82	6.34	2.443	17.0	5.17	205.6
Final										

MISCELLANEOUS OBSERVATIONS/PROBLEMS WELL WENT DRY @ 1322, WAITED FOR RECHARGE AND STARTED AGAIN.

SAMPLE DESTINATION

Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

GROUNDWATER SAMPLING FIELD LOG

Well No. NY-4
Key No.
PID Background (ppm) 0.0
Well Headspace (ppm) 0.0

Site Name On-Site Consolidation Area
Sampling Personnel SLL, SPR
Date 6/14/99 Time In / Out 1200 / 1300
Weather Partly cloudy, 80°F

WELL INFORMATION

	TIC	BGL
Reference Point Marked on Casing	X	
Height of Ref. Pt. Relative to Grade	Flush	
Well Diameter	2"	
Well Depth	31.37	
Screen Interval Depth	17'-31'	
Water Table Depth	9.91'	
Intake Depth of Pump/Tubing	25'	

Pump Start Time 1205
Pump Stop Time 1240
Sample Time 1235
Sample ID NY-4
Sampled for:
APPENDIX IX+3 EXCLUDING PESTICIDES and HEI
(X) VOCs / HCL, 2-40ml VOAs
(X) SVOCs /1 L Amber
(X) Dioxin / 1L Amber
(X) Metals (Total) / HNO3, 500ml Plastic
(X) Cyanide / NaOH, 500ml Plastic
(X) Sulfide / NaOH,ZnAc; 500ml glass - no headspac
(X) PCBs (Total) / 1L Amber

Redevelop? Y N

WELL WATER INFORMATION

Length of Water Column	21.46
Volume of Water in Well	3.50
Minutes of Pumping	35 min

EVACUATION INFORMATION

Volume of water removed from well 4 Gallons
Did well go dry? Y (N)
Evacuation Method: Bailer ( ) Pump (X)
Pump Type: GRUNDFOS
Water Quality Meter Type(s) / Serial Numbers: YSI and HACH Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (TIC)	Depth to Water	Temp. (Celcius)	pH	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/l)	ORP (mV)
1210	.400	.25	11.80		10.27	7.73	0.395	213.2	4.30	134.4
1213	.400		12.90		10.60	7.51	0.380	131.6	2.98	142.9
1216	.400		14.33		10.42	7.49	.394	59.5	2.41	146.0
1219	.400		14.91		11.16	7.44	0.391	57.3	2.22	148.4
1221	.400	15.37			12.11	7.52	0.387	42.5	2.04	151.0
1224	.400		15.54		12.52	7.51	0.385	41.7	2.01	153.0
1227	0.400		16.49		12.81	7.57	0.395	39.0	1.95	153.3
1230	0.400		17.93		13.07	7.62	0.390	38.8	2.04	155.2
Final	.400		17.93		13.07	7.62	0.390	38.8	2.04	155.2

MISCELLANEOUS OBSERVATIONS/PROBLEMS

SAMPLE DESTINATION

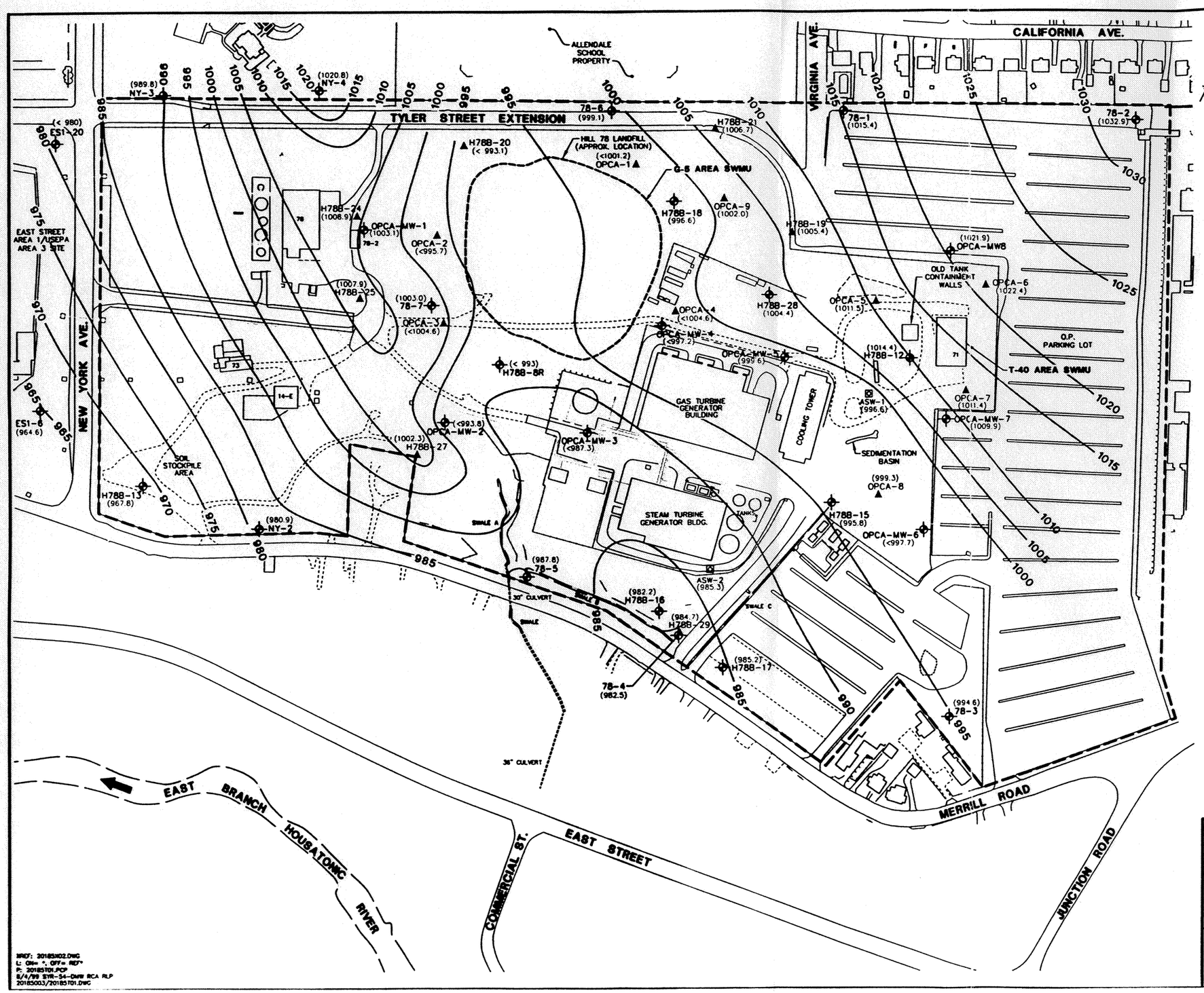
Laboratory: CT+E Environmental
Delivered Via: Fed Ex
Airbill #:

Field Sampling Coordinator:

Attachment C

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Hill 78 Area - Top of Till Contours



LEGEND:

- APPROXIMATE SITE BOUNDARY
- FENCELINE
- H788-15 EXISTING MONITORING WELL LOCATION
- ASW-4 DEEP WATER SUPPLY WELL LOCATION (INSTALLED SEPT. 1988 - MAY 1991)
- OPCA-8 EXISTING SOIL BORING LOCATION
- (995.8) TOP OF TILL ELEVATION (FEET)
- (< 993) THE TILL UNIT WAS NOT ENCOUNTERED WITHIN THE TOTAL DEPTH OF THE BORING. THE ELEVATION GIVEN WITH A LESS THAN SIGN (<) IS THE ELEVATION OF THE BASE OF BORING AND THE TOP OF TILL UNIT IS INTERPRETED TO BE BELOW THAT DEPTH
- 995 TOP OF TILL ELEVATION CONTOUR LINE (FEET)

NOTES:

1. MAPPING BASED ON AUTOCAD DRAWING FILE (PLANT3.CAD) AS PROVIDED BY GE AND ADDITIONAL INFORMATION FROM THE MCP PHASE II SCOPE OF WORK AND PROPOSAL FOR RCRA FACILITY INVESTIGATION (O'BRIEN & GERE ENGINEERS, INC., FEBRUARY 1996) AS WELL AS SUPPLEMENTAL SITE SURVEY INFORMATION OBTAINED BY HILL ENGINEERS, PLANNERS & ARCHITECTS (WEEK OF MAY 29, 1997). LOCATIONS SOUTH OF MERRILL ROAD DIGITIZED FROM AUGUST 1990 AIR PHOTO AND ARE APPROXIMATE.
2. SITE BOUNDARY IS APPROXIMATE.
3. PRE-1996 SAMPLE LOCATIONS ARE APPROXIMATE. POST-1996 SAMPLE LOCATIONS SURVEYED BY HILL ENGINEERS, PLANNERS & ARCHITECTS OR BLASLAND, BOUCK AND LEE, INC.
4. ELEVATIONS REFERENCED TO NGVD OF 1929.

100' 0 100' 200'
SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
HILL 78 AREA/USEPA AREA 2

TOP OF TILL CONTOURS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

SRDF: 20185102.DWG
L: ON= *, OFF= REF*
P: 20185T01.PCP
8/4/98 SYR-34-DWB RCA RLP
20185003/20185T01.DWG

Attachment D

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Storm Sewer Soil Sampling Results

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
HILL78/USEPA AREA 2

ON PLANT CONSOLIDATION AREA STORM SEWER RELOCATION SAMPLING
SOIL BORING DATA

Results in parts per million(ppm), dry-weight

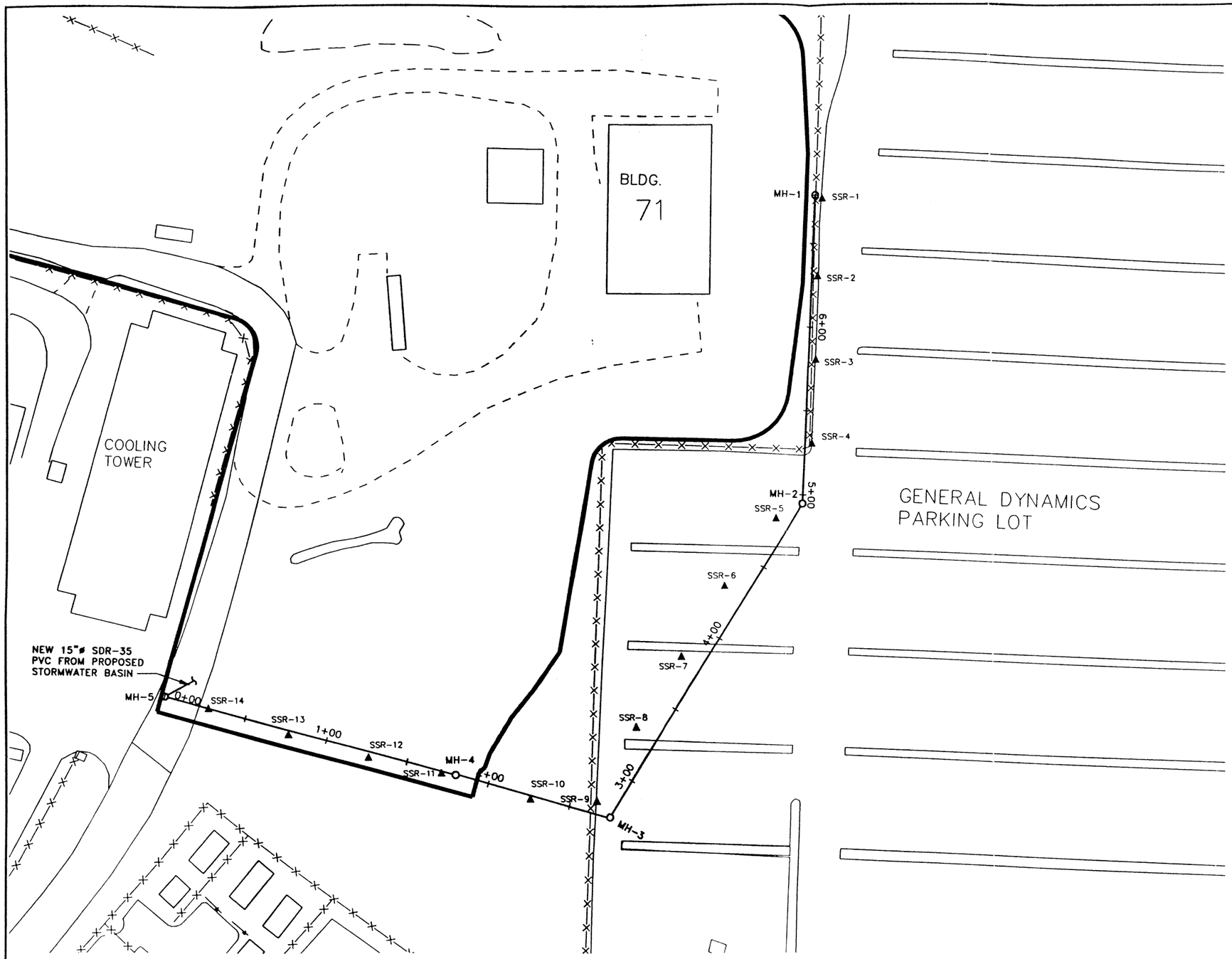
Sample ID	Depth (feet)	Date Collected	Aroclor-1254	Aroclor-1260	Total PCBs
SSR-1	0 - 2	6/3/99	ND(0.036)	0.34	0.34
	2 - 4	6/3/99	ND(0.042)[ND(0.038]	0.037 J [ND(0.038]	0.037 J [ND(0.038]
	4 - 6	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	6 - 8	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	8 - 10	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	10 - 12	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-2	0 - 2	6/3/99	0.10	ND(0.036)	0.10
	2 - 4	6/3/99	ND(0.039)	ND(0.039)	ND(0.039)
	4 - 6	6/3/99	ND(0.036)	0.039	0.039
	6 - 8	6/3/99	ND(0.046)	0.029 J	0.029 J
	8 - 10	6/3/99	ND(0.036)	0.014 J	0.014 J
	10 - 12	6/3/99	ND(0.036)	0.013 J	0.013 J
	12 - 14	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-3	0 - 2	6/3/99	ND(0.036)	0.040	0.040
	2 - 4	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	4 - 6	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	6 - 8	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	8 - 10	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	10 - 12	6/3/99	ND(0.037)	0.020 J	0.020 J
	12 - 14	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-4	0 - 2	6/3/99	0.074	ND(0.034)	0.074
	2 - 4	6/3/99	ND(0.036) [ND(0.036]	ND(0.036) [0.018 J]	ND(0.036) [0.018 J]
	4 - 6	6/3/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	8 - 10	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	10 - 12	6/3/99	ND(0.039)	ND(0.039)	ND(0.039)
	12 - 14	6/3/99	ND(0.037)	0.019 J	0.019 J
SSR-5	0 - 2	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	2 - 4	6/3/99	ND(0.034)	ND(0.034)	ND(0.034)
	4 - 6	6/3/99	ND(0.037)	0.054	0.054
	6 - 8	6/3/99	ND(0.039)	ND(0.039)	ND(0.039)
	8 - 10	6/3/99	ND(0.038)	0.024 J	0.024 J
	10 - 12	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-6	0 - 2	6/3/99	ND(0.035)	ND(0.035)	ND(0.035)
	2 - 4	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)
	4 - 6	6/3/99	ND(0.036)	0.015 J	0.015 J
	6 - 8	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	8 - 10	6/3/99	ND(0.038)	0.051	0.051
	10 - 12	6/3/99	ND(0.038)	ND(0.038)	ND(0.038)
SSR-7	0 - 2	6/3/99	ND(0.037)	ND(0.037)	ND(0.037)
	2 - 4	6/3/99	ND(0.036) [ND(0.037]	ND(0.036) [ND(0.037]	ND(0.036) [ND(0.037]
	4 - 6	6/3/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/3/99	ND(0.034)	ND(0.034)	ND(0.034)
	8 - 10	6/3/99	ND(0.034)	ND(0.034)	ND(0.034)
	10 - 12	6/3/99	ND(0.036)	ND(0.036)	ND(0.036)

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
HILL78/USEPA AREA 2

ON PLANT CONSOLIDATION AREA STORM SEWER RELOCATION SAMPLING
SOIL BORING DATA
Results in parts per million(ppm), dry-weight

Sample ID	Depth (feet)	Date Collected	Aroclor-1254	Aroclor-1260	Total PCBs
SSR-8	0 - 2	6/4/99	ND(0.037)	ND(0.037)	ND(0.037)
	2 - 4	6/4/99	ND(0.038)	0.040	0.040
	4 - 6	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/4/99	ND(0.037)	ND(0.037)	ND(0.037)
	8 - 10	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	10 - 12	6/4/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-9	0 - 2	6/4/99	ND(0.036)	0.19	0.19
	2 - 4	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
	4 - 6	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
	6 - 8	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	8 - 10	6/4/99	ND(0.036)	ND(0.036)	ND(0.036)
	10 - 12	6/4/99	ND(0.037)	ND(0.037)	ND(0.037)
SSR-10	0 - 2	6/4/99	ND(0.035)	0.26	0.26
	2 - 4	6/4/99	ND(0.037)	ND(0.037)	ND(0.037)
	4 - 6	6/4/99	ND(0.036)	ND(0.036)	ND(0.036)
	6 - 8	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	8 - 10	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
SSR-11	0 - 2	6/4/99	ND(0.036)	0.053	0.053
	2 - 4	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
	4 - 6	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	8 - 10	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
SSR-12	0 - 2	6/4/99	0.28	ND(0.035)	0.28
	2 - 4	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
	4 - 6	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/4/99	ND(0.034) [ND(0.034)]	ND(0.034) [ND(0.034)]	ND(0.034) [ND(0.034)]
	8 - 10	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
SSR-13	0 - 2	6/4/99	8.6	ND(0.70)	8.6
	2 - 4	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	4 - 6	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	6 - 8	6/4/99	ND(0.034)	ND(0.034)	ND(0.034)
	8 - 10	6/4/99	ND(0.036)	ND(0.036)	ND(0.036)
SSR-14	0 - 2	6/4/99	ND(1.8) [ND(0.70)]	43 [6.6]	43 [6.6]
	2 - 4	6/4/99	4.9	ND(0.34)	4.9
	4 - 6	6/4/99	0.94	ND(0.037)	0.94
	6 - 8	6/4/99	ND(0.035)	ND(0.035)	ND(0.035)
	8 - 10	6/4/99	0.41	ND(0.036)	0.41

Notes:
1. Samples were collected by Blasland, Bouck & Lee, Inc., and were submitted to CT&E Environmental Services, Inc. for analysis of PCBs.
2. ND - Analyte was not detected. The value in parentheses is the associated detection limit.
3. Duplicate results are presented in brackets.
4. J - Indicates an estimated value less than the CLP-required quantitation limit.



LEGEND:

- APPROXIMATE BOUNDARYOF PROPOSED BUILDING 71 CONSOLIDATION AREAS
- EXISTING SECURITY FENCE
- SSR-1 — SAMPLE LOCATION
- MH-1 — PROPOSED STORM SEWER PIPING AND MANHOLE

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. -FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND, BOUCK & LEE, INC. (BBL) CONSTRUCTION PLANS, AND ON OBSERVATIONS DURING A SITE VISIT BY BBL PERSONNEL ON DECEMBER 3, 1997.
2. SITE BOUNDARIES ARE APPROXIMATE.
3. NOT ALL PHYSICAL FEATURES SHOWN.

0 30' 60'
GRAPHIC SCALE

X: 20185X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL.PCP
8/4/99 SYR-54-GMS RLP
20185003/REPORT/20185808.DWG

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
DETAILED WORK PLAN FOR
ON-PLANT CONSOLIDATION AREAS

STORM SEWER RELOCATION SAMPLING LOCATIONS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

Attachment E

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

MDEP Protocols for Well Decommissioning

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

STANDARD REFERENCES FOR MONITORING WELLS

SECTION 4.6 DECOMMISSIONING OF MONITORING WELLS

SECTION 4.6
DECOMMISSIONING OF MONITORING WELLS

TABLE OF CONTENTS

LIST OF FIGURES

4.6 DECOMMISSIONING OF MONITORING WELLS

4.6-1 PURPOSE

Any abandoned monitoring well that is no longer in use or that is unfit for its intended purposes should be decommissioned. Plugging the well and surface restoration are the central features of the decommissioning process. Plugging consists of constructing a low permeability cylinder or plug within that portion of the subsurface occupied by the well and its annulus, including the uncased portion of bedrock wells as well as the cased portion. Surface restoration consists of the removal of the upper three to four feet of the well and backfilling the area with an effective seal. An abandoned monitoring well has been defined for the purpose of these Standard References (SRs) as "a well whose use has been permanently discontinued; as used in these References it includes a monitoring well, piezometer, or observation well that is no longer suitable for use either for water-level measurements or water quality sampling."

Proper plugging of such wells will:

- Eliminate physical hazards
- Prevent ground water contamination
- Conserve the yield and hydrostatic head of confined aquifers
- Prevent the intermingling of potable and non-potable ground water, and
- Prevent the migration of contamination through a confining layer separating aquifers.

It should be noted that the objective in Massachusetts differs markedly from the goals established by the American Water Works Association and the statutes, regulations, or guidelines of most other states. Many documents contain the following language: "The basic concept of proper sealing of abandoned wells is restoration, as far as feasible, of the controlling hydrogeological conditions that existed before the well was drilled and constructed. If this restoration can be accomplished, all the objectives of plugging wells will be adequately fulfilled." To accomplish this goal some states have suggested the placement of sand and gravel opposite the more permeable subsurface zones and clay opposite less permeable zones. While that goal is an admirable one, it is also one which, in DEP's opinion, is unattainable in practice. In order to meet the objectives of proper plugging as stated above, DEP has tried to develop a simple, workable approach that will solve the existing and potential problems from unsafe abandoned wells.

Some examples of the types of unsafe wells that may cause problems include:

- Buried uncapped wells: contaminants may enter the well through the buried top of the casing, travel down the well casing, and enter the aquifer through the well screen and wall of the annulus;
- Wells with cracked or corroded casing: surface water may enter the well;
- Improperly constructed wells: an unsealed or improperly sealed annular space around the outside of a well casing or between an inner and outer casing may serve as a channel for surface water to migrate into an aquifer and/or ground water may be transferred from one aquifer to another;
- Open hole wells in bedrock: may serve to interconnect aquifers in different formations;
- Unplugged abandoned flowing artesian wells: this can result in a loss of water, reduction of regional artesian head and localized surface flooding; and
- Uncovered and unplugged abandoned wells with large inside diameter: these may represent a physical hazard to human beings and animals, as well as a disposal receptacle for contaminants, waste, and debris.

4.6-2 PRELIMINARY WORK TO BE PERFORMED BEFORE UNDERTAKING WELL PLUGGING

4.6-2.1 Who Can Perform Proper Well Decommissioning?

One should be a registered well driller in Massachusetts or a person knowledgeable with the installation of wells in order to decommission them. There is no nationally recognized or state-approved examination or certification process for well decommissioning and plugging. However, it is obvious that a well contractor or person who is familiar with well construction and the geologic conditions of the region is preferable to a person who does not routinely perform such work. If the existing well must be "over drilled" then a registered Massachusetts well driller must perform the work. It is expected that an experienced well contractor will be familiar with the correct procedures to follow. That experience should provide substantial savings to the property owner in the long run.

The property owner should ask the well contractor about his qualifications. Some drillers or contractors specialize in rock wells; others in overburden wells. Some have worked extensively with multi-level wells at sites with contaminated ground water; others have only worked with single-level, cased water wells.

4.6-2.2 Location and Inspection

Locating the abandoned well is the first step in decommissioning. While some wells are easily located, others may be buried or otherwise concealed. It may be possible to find the location of abandoned wells through contact with past land owners, occupants, retired workers, neighbors, or well contractors. Regulatory officials and hydrogeologic reports may have useful information. The well records maintained by the United States Geological Survey (USGS), Water Supply Division, Massachusetts Section, with headquarters in Marlborough, Massachusetts, all have been assigned coordinates of latitude and longitude. For well locations, historic documents may be used, such as aerial photo and assessing maps, insurance company maps or photographs. Metal detectors may be of value in locating buried metal casings.

Obtaining accurate information on the well's original construction and present condition is the next step in decommissioning. This information is best obtained from monitoring well drilling records. Recent well records may be obtained from local Boards of Health, the Water Resources Division of the Department of Environmental Management (DEM), USGS Water Resources Division, or DEP.

Next a site inspection is necessary to ascertain the condition of the well and to note if the well is accessible, located in a pit or buried, if a dedicated pump is in place, or if the well is currently operating. The inspection should also note if the well has been damaged or obstructed. A downhole TV camera survey can sometimes provide valuable information as it can verify the current well depth, condition, construction, and the presence or absence of well casing in rock wells.

4.6-2.3 Clearing the Well

Decommissioning a well starts with removal of any obstructions, such as drop pipes, check valves and pumps, and clearing any obstacles or debris that may have entered the well.

When the well is obstructed by pumps or other equipment have been dropped down the well, the debris must be removed or "fished" out before the well can be sealed. A variety of fishing tools are used to remove obstructions. Threaded taps on the end of a drill rod may be run into the hole in an attempt to screw into the top of a pump or drop pipe. An other type of equipment used is an "over shot" (a casing with inner teeth that is run over the obstacle to be removed). Corkscrews and spears also have been used to hook the obstacle for removal.

In some instances the driller may chop or grind up the obstacles in an attempt to clear the well. Debris or other materials such as rock, sand, clay, stones, and wood is usually drilled out or washed out of the hole. This technique appears to be suitable for destroying multi-level wells installed within a single borehole.

4.6-2.4 Casing Removal or Destruction

Assuming the original well did not have an adequate seal in the annular space outside the well casing, in most cases the original well casing should be destroyed in place or pulled out of the ground.

However, if the As-Built Notes and Records indicate that the annular space contains an adequate seal, this information should enable the well contractor to design a simpler and less costly decommissioning procedure. The procedure should not require destruction or removal of the entire well casing, but would require adequate perforation of any well screen to allow the grout to penetrate the filter pack. Insert neat cement grout (or its equivalent) into the uncased portion of a bedrock well or into the filter pack around the well screen and fill the riser pipe with the same grout material. Figures 4.6-1 through 4.6-3 show the zones to be plugged through the well riser for three types of well installation where the annular space contains an adequate seal. Terminate the well casing at a minimum of 3 to 4 feet below the land surface or at the water table, which ever is encountered first. Finally, finish off the well at the land surface in a manner as described in Section 4.6-4. Figures 4.6-1 through 4.6-3 also show the zones to be prepared for a new surface finish. This procedure is appropriate for monitoring wells installed under all types of hydrogeologic conditions.

In instances where a well has penetrated a confining layer separating aquifers and there is no evidence that the annular space around the casing was adequately sealed during installation, the most conservative approach is to destroy or remove the casing by over drilling. Simply pulling the casing in this situation may result in the collapse of the formation before an adequate seal can be placed across the confining layer. The easiest way to over drill and keep the cutting bit in line with the hole (rather than straying off the hole) would be to spin casing over and around the existing observation well. The observation well will help hold the casing in line with the borehole as opposed to roller-bitting operations where an in-place casing will tend to deflect the cutting bit. Augers would probably also work in lieu of spinning casing, but spinning casing would probably be better as it is less likely to damage the observation well and, therefore, continue down the hole rather than veering off.

If, however, vertical contaminant migration across aquifers is not a concern, such as a shallow (15-30 feet) water table well in glacial sands and gravels, a choice may be made to either over drill the well, pull the well casing out of the ground or to plug the well in place. In this case, the presence or absence of annular seal is not a factor. If attempts are made to pull the casing out of the ground and the hole collapses, care must be taken to compact the materials in the hole to avoid future subsidence at the surface. Regardless of which method is chosen, the most important consideration is to seal the well from possible surface infiltration. This is accomplished by plugging the well/boring (Section 4.6-3) and terminating the well 3 to 4 feet below grade then backfilling with concrete or other appropriate seal (Section 4.6-4).

If asbestos well casing is encountered or suspected, plugging the well is the only choice. No attempt should be made to destroy or remove this material from the ground as the risk of creating a friable asbestos problem outweighs the potential negative impact from the well.

4.6-3 PLUGGING THE WELL

Neat cement (or its equivalent) should be inserted into the open portion of the well bore, whether the opening is in bedrock or overburden. As noted above, special care must be exercised if the well penetrates a confined aquifer. The low permeability layer that creates the confined aquifer must be sealed so that there is no chance of leakage between aquifers. If the hydrostatic head is large, this may present an extreme challenge to the well contractors.

4.6-3.1 Grouting Material

There are a large number of grouts available that can be used to plug abandoned wells. Each grout has certain special characteristics and distinctive properties. Therefore, one grout may be especially suited for doing a particular job. The selection of the most appropriate material or combination of materials is dependant on the construction of the well, the nature of the formation penetrated, the material and equipment available, the location of the well with respect to sources of contamination, and the cost of doing the work.

At the present time, a neat cement grout possesses most of the advantages that DEP looks for in a plug for abandoned wells where the grout will be inserted through the well riser. It may be used as grout for abandoned wells installed in all geologic formations. Neat cement is superior for sealing small openings, for penetrating any annular space outside of casings, and for filling voids in the surrounding formation. When applied under pressure, it is strongly favored for sealing wells under artesian pressure or those encountering more than one aquifer. Neat cement is also superior to other grouts as it avoids the danger of separation.

The use of bentonite pellets to plug the saturated portions of a well with a neat cement plug above is an acceptable but, less satisfactory method. The use of bentonite pellets is recommended solely for plugging shallow (15-30 feet) water table wells in highly permeable aquifers where there is no threat of vertical migration of contamination and where bridging is less likely. Care must be taken to compact the bentonite to avoid bridging of the pellets in the casing. See Section 4.2 Specifications for Wells, Screen, Filters, and Seals, for a more thorough treatment of this subject.

If the original well was not properly sealed or if there is not sufficient information available to determine whether a well was properly sealed, the most appropriate grout for such purposes appears to be a bentonite/cement grout, such as is recommended in Section 3.9 Plugging Boreholes.

4.6-3.2 Grout Placement

After clearing of the well bore, the well is ready for sealing. Grout slurries must be placed from the bottom to the top and not from the top to the bottom. In other words, slurries cannot be poured from the land surface into the borehole, annular space, or well to be sealed. When grout is placed at the bottom of the space to be grouted and finally appears at the surface or top, the integrity of the plug is assured. Methods involving pouring grout from the surface into the annular space are not reliable because bridging may occur and the depth of grout descent cannot be easily verified. However, pouring grout through a tremie tube is sometimes a satisfactory alternative to pumping through a tremie tube. An improperly sealed well may be as much a threat to ground water quality as an unsealed well.

The well contractor should calculate the volume of slurry that will be needed as described below in Section 4.6-3.3. He should have enough mixed slurry ready for placement so that it will not be necessary to stop the grouting process in order to prepare more slurry. Due to borehole irregularities, it is advisable to have on hand 25 to 50% more slurry than the calculated volume.

Grouting methods are discussed in detail in Section 4.3, Installation of Monitoring Wells. The grout pipe (or tremie pipe) method, either with or without a grout pump, appears to be a method of grout placement that will achieve all the objectives of the well plugging program.

A vigorous preventative maintenance program for mixing and pumping equipment, compressors, hoses and fittings, is essential. This includes adequate clean-up of equipment after each grout job. Failure of equipment in the field can result in: waste of grouting material, lost labor and equipment costs, property damage, contamination of the grout, and/or an unsuccessful or incomplete grout job.

4.6-3.3 Calculations and Measurements

To assure that a well is properly plugged and that there has been no bridging of the material, verification calculations and measurements are made by the well contractor to determine whether the volume of material placed in the well equals or exceeds the volume of the casing or the hole that has been plugged and/or filled. Some useful formulas for calculating well volumes are shown below:

- Gallons per 100 feet = 4.08 x (Inside Hole or Casing Diameter)^2
- Cubic feet of grout per 100 feet = 0.55 x (Inside Hole or Casing Diameter)^2
- 7.48 gallons = 1 cubic foot
- 202.0 gallons = 1 cubic yard

4.6-4 FINAL SURFACE FINISH

The contractor should return to the well no sooner than 24 hours after sealing to allow time for settlement. A proper surface seal is the final step in decommissioning a well. Where a concrete surface seal is appropriate, the remaining 3 to 4 feet at the top of the well should be filled with concrete. Form the top to create a concrete slab at least six inches thick above grade, and with a diameter at least two feet greater than the borehole wall. This procedure is more fully described in Section 4.3 Installation of Wells.

Where a concrete surface seal is not compatible with the existing land-uses (i.e., agriculture, shopping malls, residential areas, etc.) the borehole or well riser should be terminated with a minimum 1 foot thick concrete plug. The remaining 3 to 4 foot portion of the borehole should be filled to grade with materials compatible with the abutting land surface and properly compacted to minimize subsidence.

4.6-5 RECORD OF DECOMMISSIONING

Complete, accurate records of the entire decommissioning procedure should be maintained by the property owner and well contractor. The following items are especially noteworthy:

- Depth sealed The depth of all plugging materials should be recorded.
- Quantity of sealing material used The quantity of sealing material used should be recorded. Measurements of static levels and depths should be recorded.
- Changes recorded Any changes in the well made during the plugging, such as perforating casing, should be recorded in detail.

Examples of Abandoned Well Reports required by the states of Minnesota and Iowa are included as Figures 4.6-4 and 4.6-5.

4.6-6 PROHIBITIONS

The use of explosives in well-plugging operations is strictly prohibited.

LIST OF FIGURES

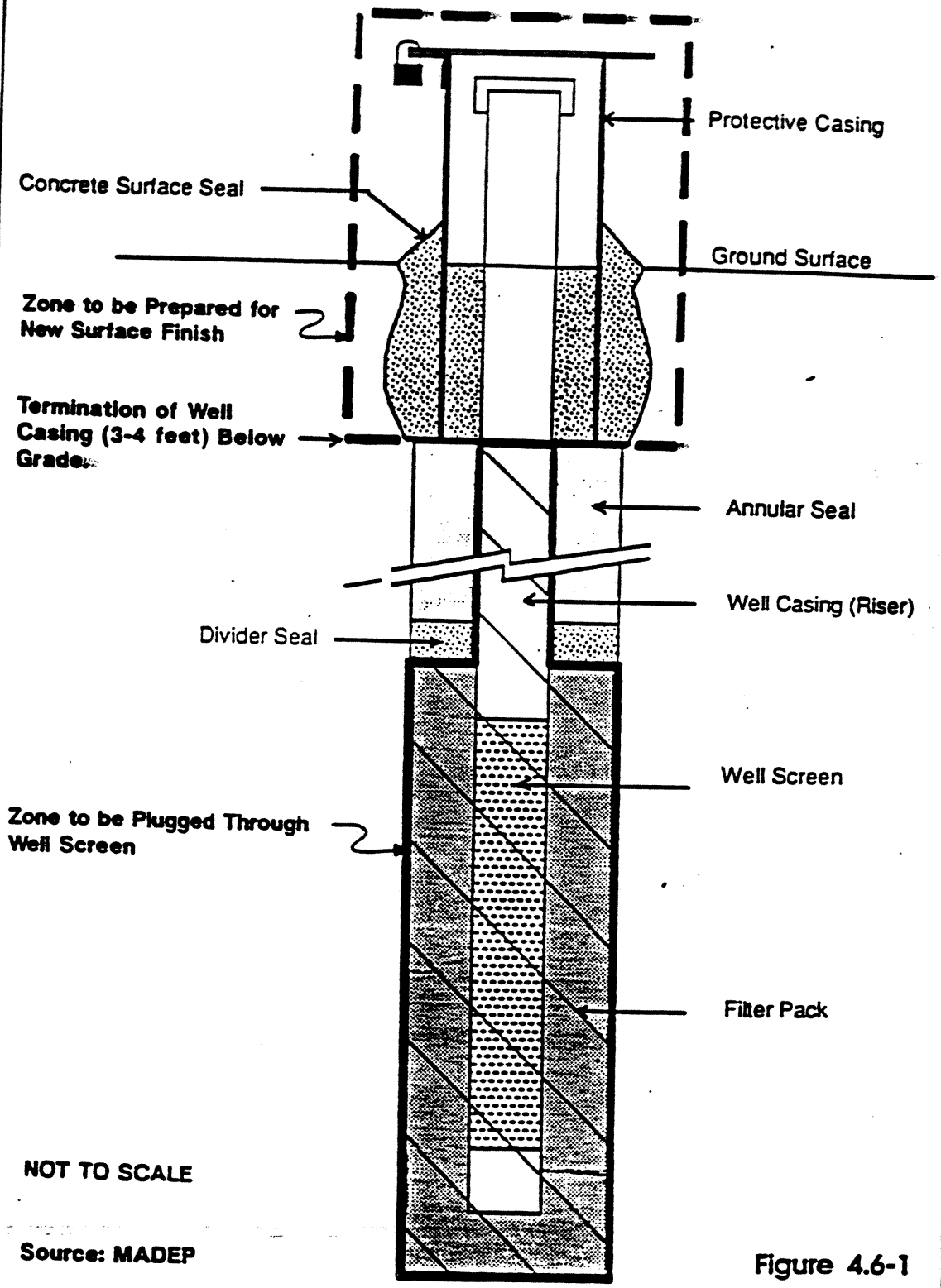
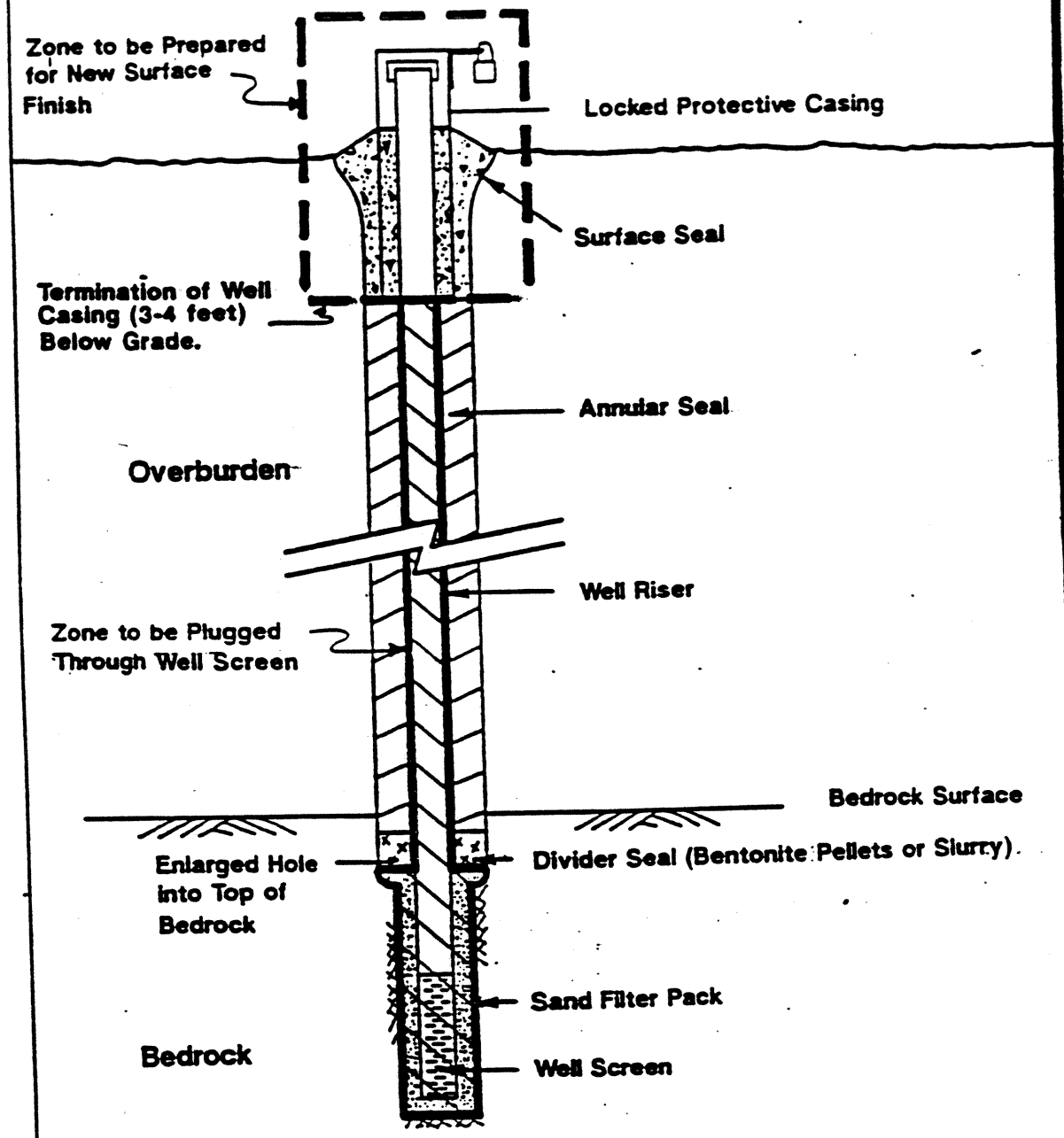


Figure 4.6-1

Diagram of an Abandoned Overburden Well.



Source: MADEP

NOT TO SCALE

Figure 4.6-2

Diagram of an Abandoned Bedrock Well with Screen.

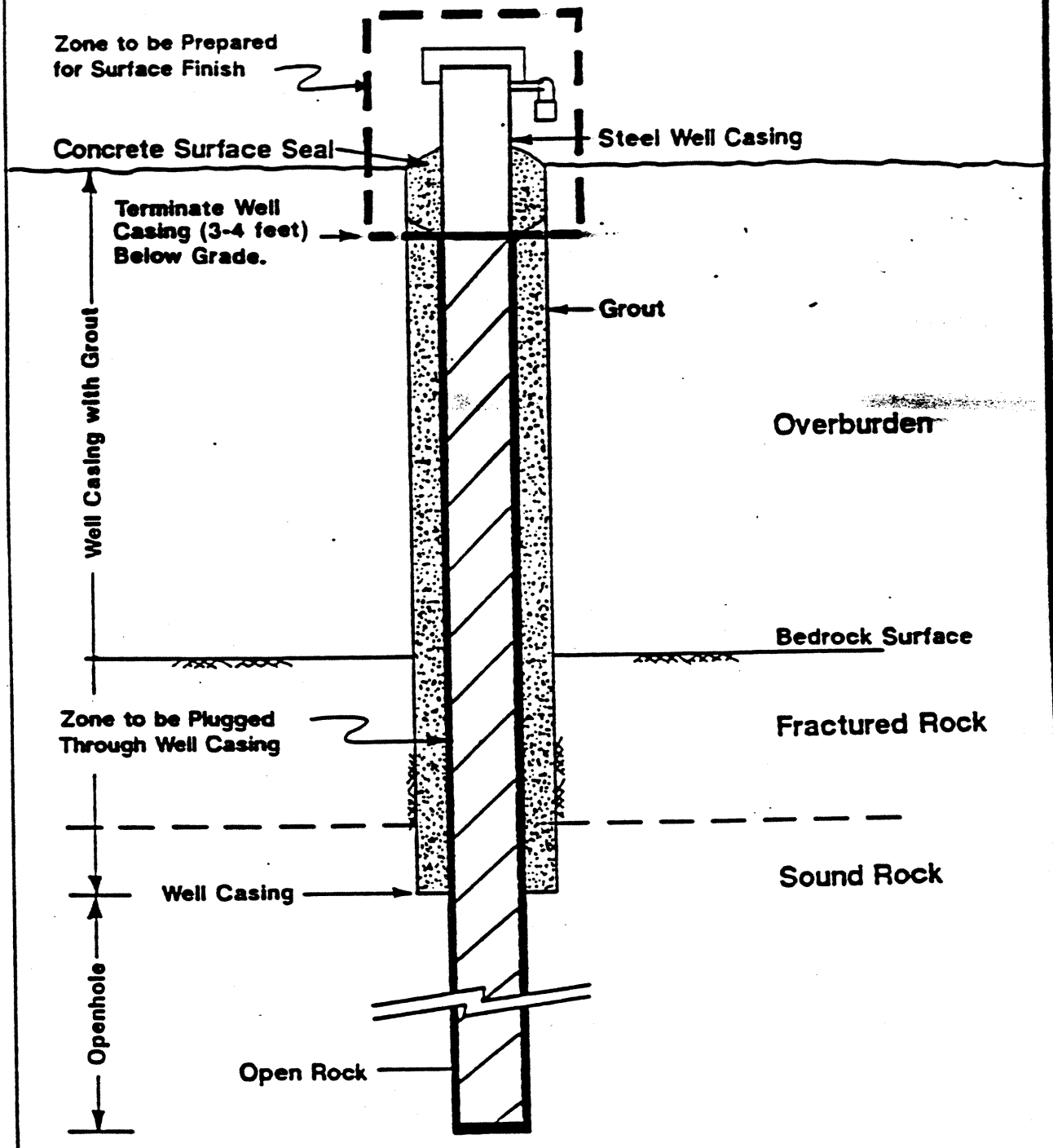


Figure 4.6-3

Diagram of an Abandoned Bedrock Well-Open Hole.

WATER WELL RECORD — ABANDONED

Anoka

Oaktree | 120 | 9 | 22 | 16 | NW SE SE

100' East of Co. Rd 9, 200' South of Co Rd 2

Red Oaks | 2 | 1

Co Rd 2 · well · Co Rd 9

John Jones
RR1 Box 23, Gillman, Mn 55297

FORMATION LOG	COLOR	HARDNESS OR FORMATION	FROM	TO
*Sand	brown	soft	0	10
Clay	green	med	10	50
Clay and Sand	grey	med	50	98
Clay	blue	med	98	115
Sand	brown	med	115	126
* formation log well nearby	estimated from (#101057)			

6. WELL DEPTH: 126' — Date drilled: 1948

8. CASING: 4 in. to 122 ft.

9. SCREEN: Type Brass Mesh — Dia. 4 inch — Slot 15 — Length 4 feet — From 122 To 126

10. STATIC WATER LEVEL: 52 — Date Measured 1/7/87

13. WELL GROUTING: Cement — 2 — 126 — 1 1/4

16. PUMP: Removed 1/7/87 — Manufacturer's Name Dacks Pump Company — Model number B-12 — HP 1/2 — Volts 110 — Length of drop pipe 72

17. EXISTING WELLS: No

REMARKS: pump removed from well. 1 1/4 yds neat cement installed thru tremie pipe. Casing cut off 2 feet below grade. Top 2' filled with native soil.

18. WATER WELL CONTRACTORS CERTIFICATION

Gopher State well Co. 74999
Box 382 Rt 1 Gillman Mn
Henry Ramsey 1/7/87
Ralph Sibley 1/7/87

WORK COPY

Figure 4.6-4

Examples of Minnesota Abandoned Well Report.

INSTRUCTIONS Page 1 of 2

Submit one completed copy of this form for each abandoned well that is plugged to the Department of Natural Resources, Wallace Building, 900 E. Grand Ave., Des Moines, Iowa 50319-0034 within thirty (30) days of completion of plugging operations.

Provide all of the information requested for Items 1 through 6 so far as it is known or can be obtained. If the date of construction or date of abandonment in Item 6 cannot be determined, provide the best estimate possible, such as "more than 20 years ago" or "prior to 1950."

Certification of plugging by the owner of the abandoned well in Item 7 is required for the plugging of all abandoned water wells.

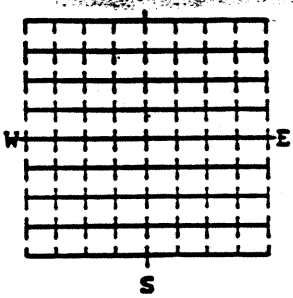
Certification of plugging by a registered well driller in Item 8 is required for all wells except large diameter (18" diameter or more) wells 100' or less in depth which are plugged by the well owner. If a registered well driller plugs this type of well, certification by the well driller is required.

1. Property Owner Name _____

2. Property Owner Address _____
Number and Street or RR

_____
City

_____
State Zip Code



LOCATE ABANDONED WELL ON THIS SECTION PLAT-640 ACRES

3. Address of property on which abandoned well is located (if different from above)

_____
Number and Street or RR

_____
City Zip Code

4. Legal description of property on which abandoned well is located:

Location ____1/4 ____1/4 ____1/4, Sec.____ T.____N., ____R. _____E.W.; _____County

5. Type of Well (*check one*)

[] Large diameter (18" or more) well 100 feet or less in depth
[] Well less than 18" diameter or greater than 100 feet in depth
[] Sandpoint well
[] Bedrock well in a single confined aquifer
[] Bedrock well in a single unconfined aquifer
[] Bedrock well in multiple aquifers
[] Well of unknown type

Figure 4.6-5

Examples of Iowa Abandoned Water Well Plugging Record.

Page 2 of 2

6. Detailed Information:

Diameter at Top of Casing _____ inches Date Constructed _____

Depth to Static Water Level _____ feet Date Abandoned _____

Total Depth _____ feet Date Plugged _____

Distance from nearest active well supplying potable water (check one):
[] More than 200 feet [] Less than 200 feet

Distance from nearest point source of potential contamination (check one):
[] More than 660 feet [] Less than 660 feet

If distance is less than 660 feet, indicate type of nearest point source of potential contamination (check one):
[] industrial waste site
[] uncontrolled hazardous waste site
[] petroleum storage area
[] hazardous waste treatment, storage or disposal area
[] agricultural chemical storage area
[] animal feedlot
[] wastewater treatment facility
[] other potential contamination source (describe) _____

7. Certification by owner. I hereby certify that the abandoned well described has been plugged in accordance with the requirements of Chapter 39 of the rules implementing 1987 Iowa Code Supplement section 455B.190:

Signature of Owner Date

8. Certification by a registered well driller. This is required for all wells except large diameter (18" diameter or more) wells 100 feet or less in depth in Quaternary sediments.

Company Name

Address

City State Zip Code

I hereby certify that the abandoned well described was plugged under my supervision in accordance with the requirements of Chapter 39 of the rules implementing 1987 Iowa Code Supplement section 455B.190:

Name of Registered Well Driller Registration No.

Signature Date

Figure 4.6-5 (continued)
Examples of Iowa Abandoned Water Well Plugging Record.

Attachment F

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Paint Filter Liquids Test Protocol

METHOD 9095A

PAINT FILTER LIQUIDS TEST

1.0 SCOPE AND APPLICATION

1.1 This method is used to determine the presence of free liquids in a representative sample of waste.

1.2 The method is used to determine compliance with 40 CFR 264.314 and 265.314.

2.0 SUMMARY OF METHOD

2.1 A predetermined amount of material is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-min test period, the material is deemed to contain free liquids.

3.0 INTERFERENCES

3.1 Filter media were observed to separate from the filter cone on exposure to alkaline materials. This development causes no problem if the sample is not disturbed.

3.2 Temperature can affect the test results if the test is performed below the freezing point of any liquid in the sample. Tests must be performed above the freezing point and can, but are not required to, exceed room temperature of 25° C.

4.0 APPARATUS AND MATERIALS

4.1 Conical paint filter: Mesh number 60 +/- 5% (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden.

4.2 Glass funnel: If the paint filter, with the waste, cannot sustain its weight on the ring stand, then a fluted glass funnel or glass funnel with a mouth large enough to allow at least 1 in. of the filter mesh to protrude should be used to support the filter. The funnel should be fluted or have a large open mouth in order to support the paint filter yet not interfere with the movement, to the graduated cylinder, of the liquid that passes through the filter mesh.

4.3 Ring stand and ring, or tripod.

4.4 Graduated cylinder or beaker: 100-mL.

5.0 REAGENTS

5.1 None.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 All samples must be collected according to the directions in Chapter Nine of this manual.

6.2 A 100-mL or 100-g representative sample is required for the test. If it is not possible to obtain a sample of 100 mL or 100 g that is sufficiently representative of the waste, the analyst may use larger size samples in multiples of 100 mL or 100 g, i.e., 200, 300, 400 mL or g. However, when larger samples are used, analysts shall divide the sample into 100-mL or 100-g portions and test each portion separately. If any portion contains free liquids, the entire sample is considered to have free liquids. If the sample is measured volumetrically, then it should lack major air spaces or voids.

7.0 PROCEDURE

7.1 Assemble test apparatus as shown in Figure 1.

7.2 Place sample in the filter. A funnel may be used to provide support for the paint filter. If the sample is of such light bulk density that it overflow the filter, then the sides of the filter can be extended upward by taping filter paper to the inside of the filter and above the mesh. Settling the sample into the paint filter may be facilitated by lightly tapping the side of the filter as it is being filled.

7.3 In order to assure uniformity and standardization of the test, material such as sorbent pads or pillows which do not conform to the shape of the paint filter, should be cut into small pieces and poured into the filter. Sample size reduction may be accomplished by cutting the sorbent material with scissors, shears, knife, or other such device so as to preserve as much of the original integrity of the sorbent fabric as possible. Sorbents enclosed in a fabric should be mixed with the resultant fabric pieces. The particles to be tested should be reduced smaller than 1 cm (i.e., should be capable of passing through a 9.5 mm (0.375 inch) standard sieve). Grinding sorbent materials should be avoided as this may destroy the integrity of the sorbent and produce many "fine particles" which would normally not be present.

7.4 For brittle materials larger than 1 cm that do not conform to the filter, light crushing to reduce oversize particles is acceptable if it is not practical to cut the material. Materials such as clay, silica gel, and some polymers may fall into this category.

7.5 Allow sample to drain for 5 min into the graduated cylinder.

7.6 If any portion of the test material collects in the graduated cylinder in the 5-min period, then the material is deemed to contain free liquids for purposes of 40 CFR 264.314 and 265.314.

8.0 QUALITY CONTROL

8.1 Duplicate samples should be analyzed on a routine basis.

9.0 METHOD PERFORMANCE

9.1 No data provided.

10.0 REFERENCES

10.1 None provided.

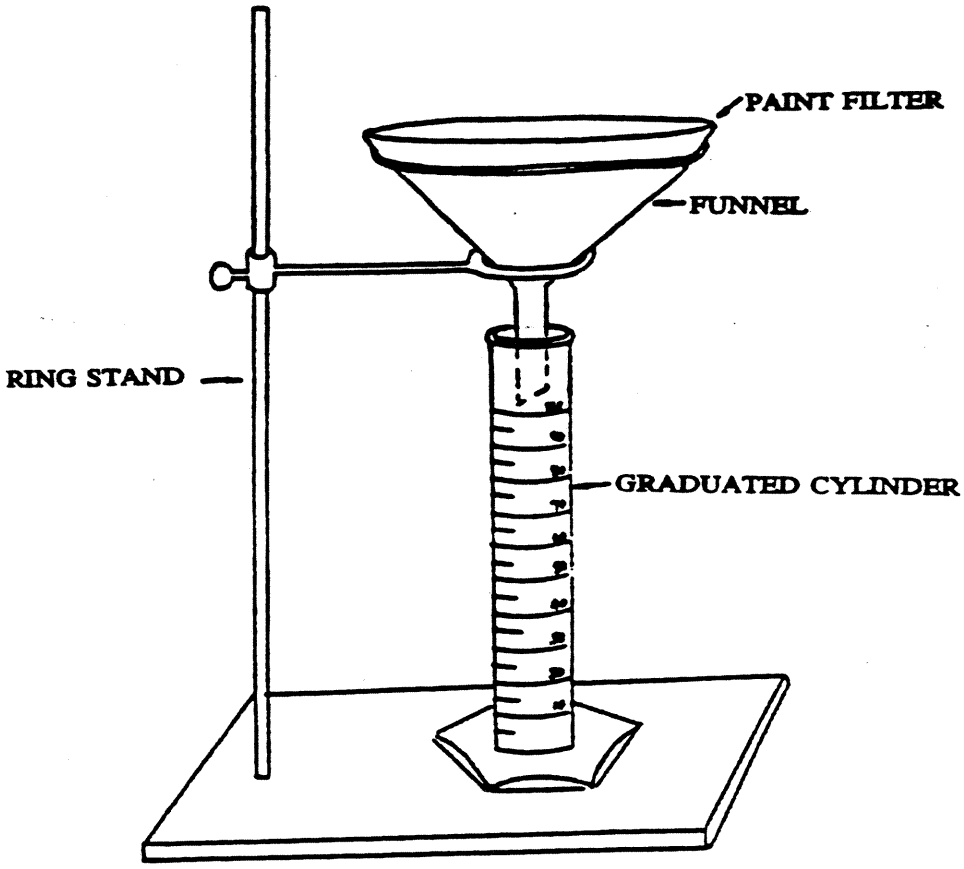
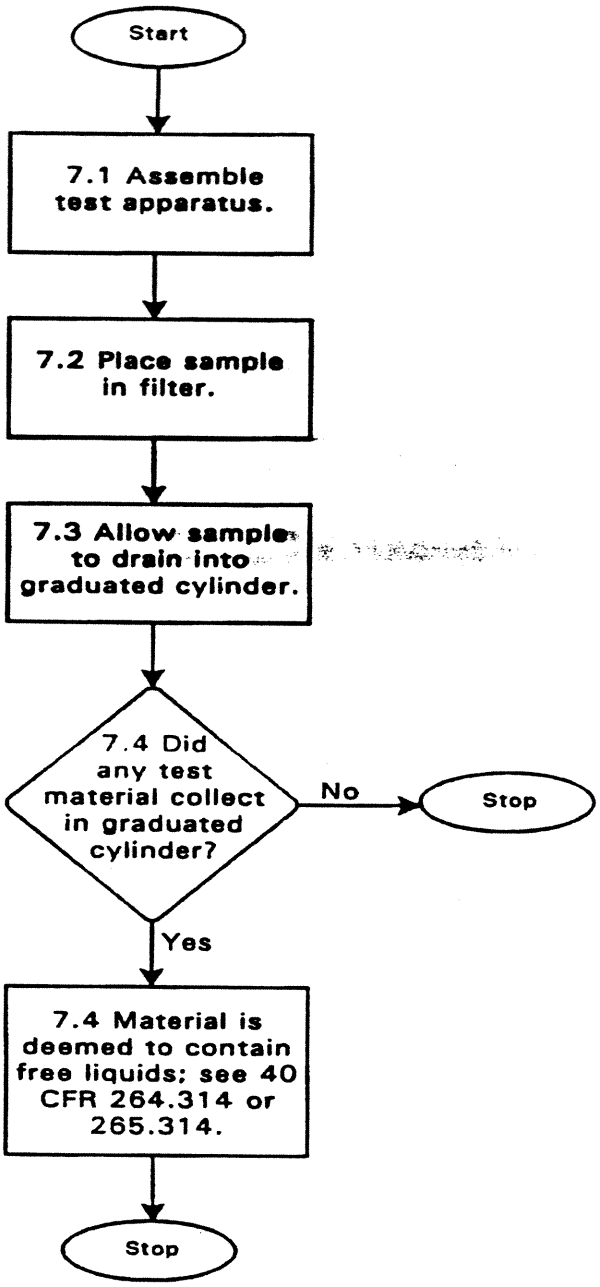


Figure 1. Paint filter test apparatus.


Start
7.1 Assemble test apparatus.
7.2 Place sample in filter.
7.3 Allow sample to drain into graduated cylinder.
7.4 Did any test material collect in graduated cylinder?
No
Stop
Yes
7.4 Material is deemed to contain free liquids; see 40 CFR 264.314 or 265.314.
Stop